VOL. 160 — NO. 16

APRIL 22, 1961

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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Brush control is an expensive, recurring problem connected with the responsibility of providing subscribers the best possible service. For one Independent company's program, see story, page 27.

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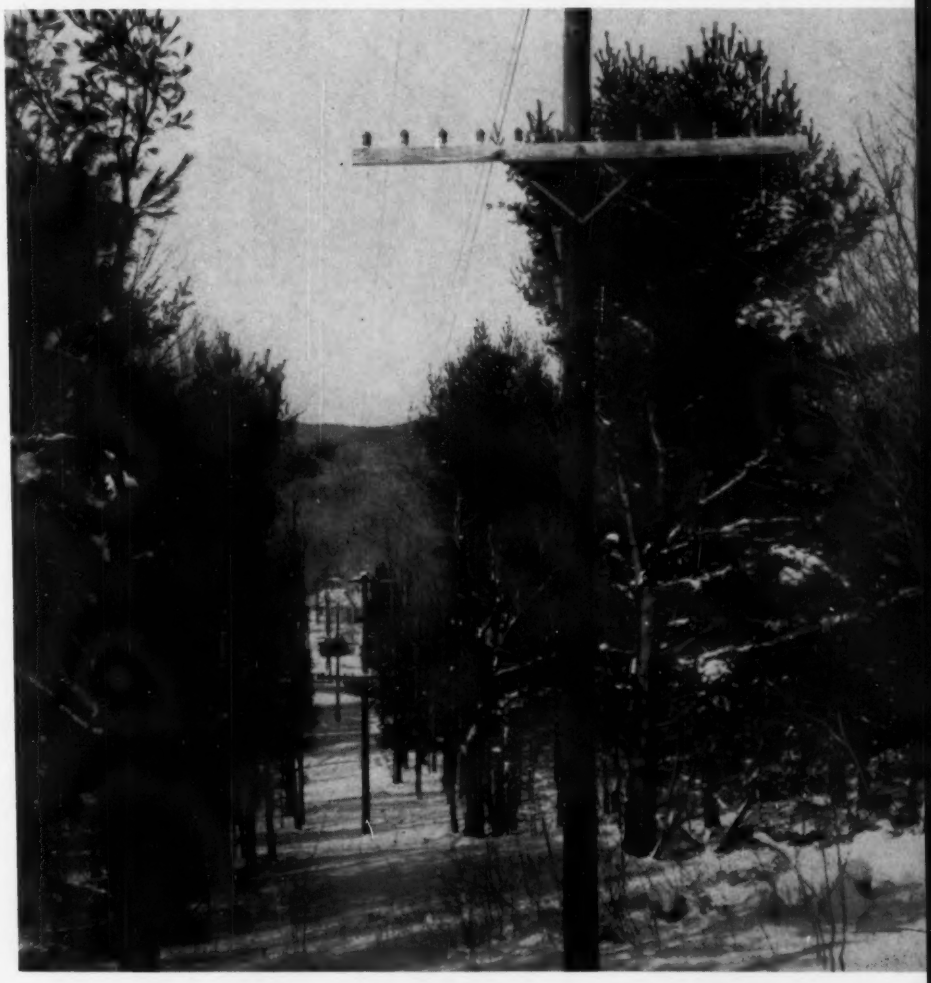
Circulation This Issue
15,986, of Which
13,562 Is Paid



SPRING CONSTRUCTION—RURAL ISSUE

MANAGEMENT · PLANT · TRAFFIC · COMMERCIAL · LEGAL · ACCOUNTING

Bury your maintenance costs with Anaconda PCP and PCPG cables

Direct burial offers many cost-cutting possibilities – (1) freedom from storm damage, (2) freedom from tree-clearing and retrimming expenses, (3) freedom from the hazards associated with power contacts and pole climbing, (4) freedom from right-of-way procurement difficulties.

Anaconda PCP and PCPG cables offer you *extra* cost-cutting features. Here are a few of them:

1. Outstanding resistance to lightning damage – a copper shield and a high-molecular-weight polyethylene belt over the core make the over-all cable highly resistant to lightning damage. The high-molecular-weight polyethylene conductor insulation protects against conductor-to-conductor lightning damage.

2. Water vapor will not cause failure – because of the excellent moisture resistance of the high-molecular-weight polyethylene insulation.

3. Full color coding – makes for low-cost installation by fast, easy splicing and terminating. Eliminates test splicing. All it takes is a one-man crew. And – all these advantages are repeated every time you add or change terminals.

4. Easy handling – this lightweight cable with its rugged corrugated shield permits easy handling during in-

stallation, plowing, and burial.

Should you select PCP or PCPG?

The difference between Anaconda PCP and PCPG cables is a difference in thickness of the corrosion-resisting, low-resistance copper shield. PCP cable, having a 0.005-inch shield, is intended to withstand attack by termites and small rodents, such as field mice. PCPG cable, with a 0.010-inch shield, is for use in areas where gopher attack is a possibility.

Find out if direct burial of Anaconda PCP or PCPG cable can help you reduce your operating and maintenance costs.

Call your nearest Anaconda district office direct. Or write: The Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

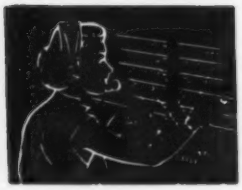
60245

PHONE THE MAN FROM

ANACONDA®

FOR PCP AND PCPG TELEPHONE CABLE

the independent manufacturer
for the independent telephone industry



FLASHES AND PLUGS

PHONY 'PHONERS NOT FUNNY. From London, England, comes the report that Paul Getty, American multi-millionaire resident of fashionable Sutton Place, has had to take drastic action in the matter of guests who make lengthy long distance calls over his telephones.

Described as "one of the world's richest and most prudent men," Getty has had a pay telephone installed in his English mansion.

"People are funny about telephones," he says. "They come as guests and make long distance telephone calls all over the world. When you speak to them about it, they look surprised and say: 'I spoke 30 minutes? Why, it couldn't have been more than 3 minutes.'"

Servants, too, according to Getty, can over-use his telephones. He admits that his present mansion staff does not over-do it, but some in the past kept calling up relatives in Scotland, and they talked and talked. The charges, of course, went on the Getty telephone bill.

There are also many workmen around the place, and they frequently call London, at 18 cents per call, which after a while—in 15 or 20 minutes—adds up to a neat sum. So—Mr. Getty has put in a telephone with a coin box, and he hopes this will handle the situation.

But if it doesn't, he states that he will never go so far as did the late William Randolph Hearst, who was known, when a guest used his telephone without telling him about it, to have packed up the wrongdoer's bags, and simply put him out.

•

SILENCE IS DEAFENING? Most people are jarred by loud sounds or clatter. Recently, the British General Post Office magazine carried a plea for elimination of noises, including finding a quiet way to close the door of a postal van.

As an outgrowth of the desire for quiet, many offices in the U. S. are now engineered to eliminate jarring noises. Recently, in a Chicago, Ill. suburb, a manufacturer sound-proofed the general offices. It is reported that the acoustical engineering firm did the job so well that, of all things, the silence got on the nerves of employes!

A management consultant was then called in. He restored calm and efficiency, it is said, by arranging for piped-in recordings of office noises. It appears, some office workers *like* the busy chatter of office machines.

•

BITTER BREW. 'Tis said, some women can cook up more over a telephone than over a stove.

But what was cooked up in Los Angeles, where a telephone operator recently won a divorce from her husband, she said, came about because she married a "wrong number."

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

1901 — 60 years — 1961

April 22, 1961

CONTENTS

IN THE NATION'S CAPITAL 19
By Francis X. Welch

1961 CONVENTION CALENDAR 20

ABC OF THE TELEPHONE, PART 98 21
By Frank E. Lee

THE POWER CONTACT HAZARD 24
By Ray Blain

CHEMICAL BRUSH CONTROL AND YOUR TRIMMING DOLLAR 27
By C. F. McLean

TROUBLE CLEARING—HOW SUBSCRIBERS LOOK AT TROUBLE—SECTION 4 31
By L. N. Martin

SALES TIPS FOR INSTALLER-REPAIRMEN 42
By Ben Smith

SERVICE AND SELLING SHARE TEXAS SPOTLIGHT 44
By Dianne P. Drucker

THE PLANT MAN'S NOTEBOOK 52
By Ray Blain

PLANT MAN'S QUIZ 54
By Ray Blain

COURTS AND COMMISSIONS 58

NEWS ON NEW PRODUCTS 64

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Here's where we make the "milestones"

Power equipment created by Lorain..."milestones" in the telephone industry ...is engineered and built in these four plants.

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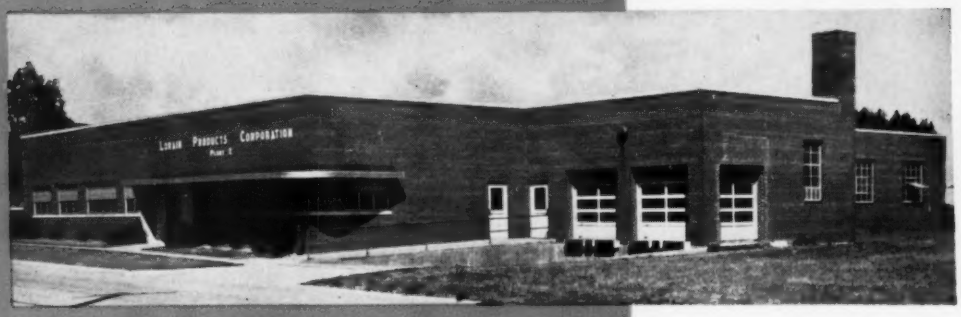

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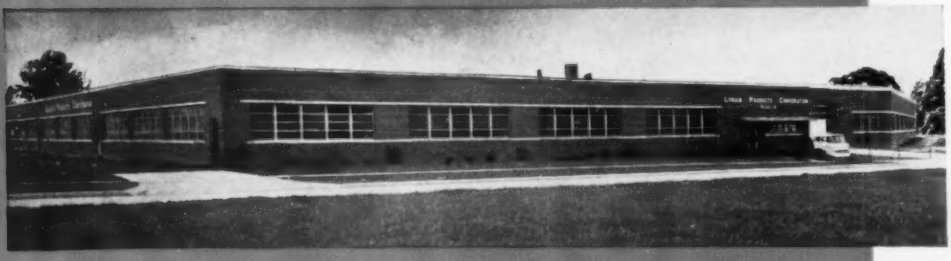

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LORAIN PRODUCTS (CANADA) LTD.—ST. THOMAS, ONTARIO

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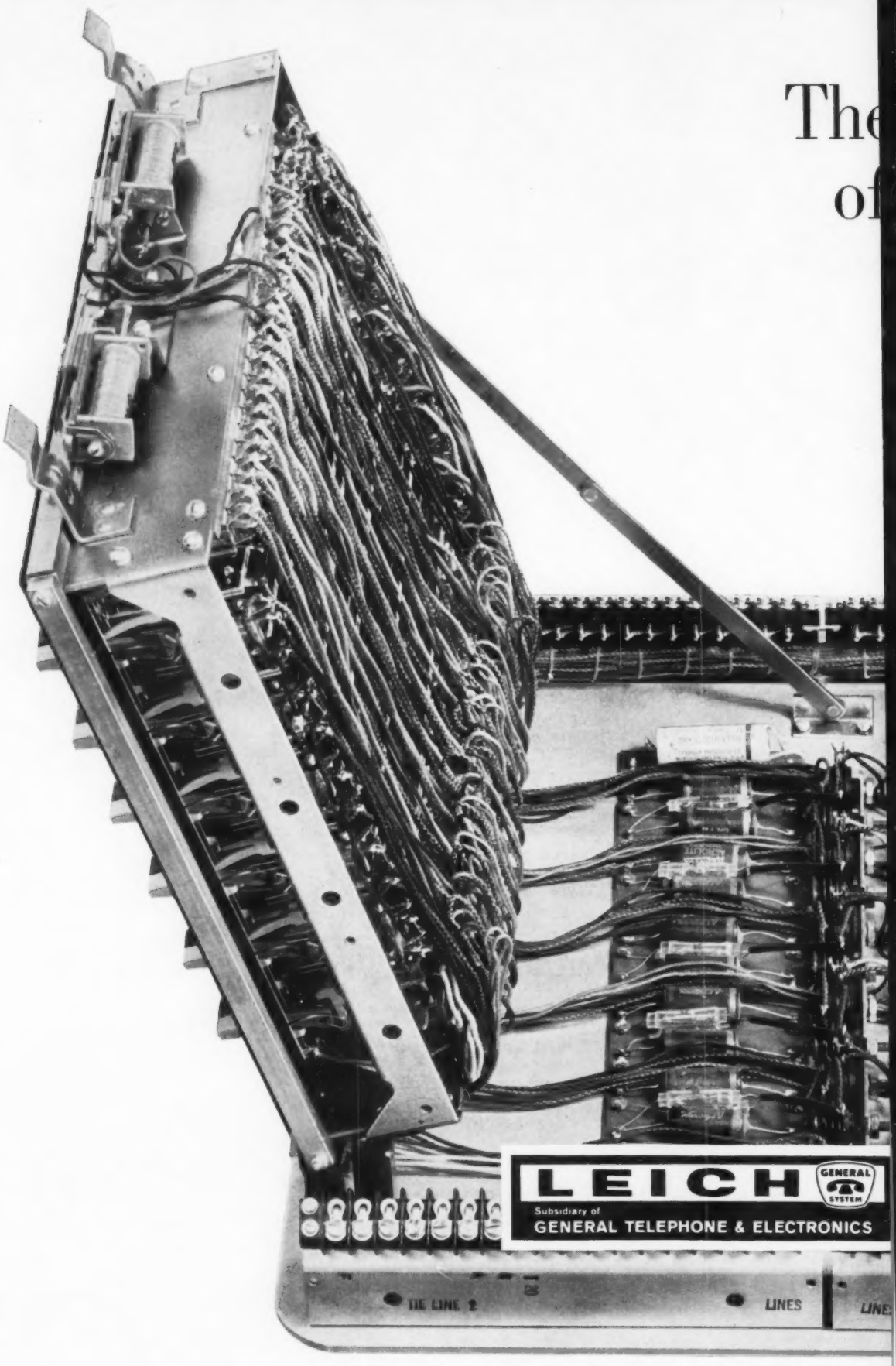
LEICH
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Subsidiary of
GENERAL TELEPHONE & ELECTRONICS
TIE LINE 2
LINES

ANATOMY
the LEICH CORDLESS PBX

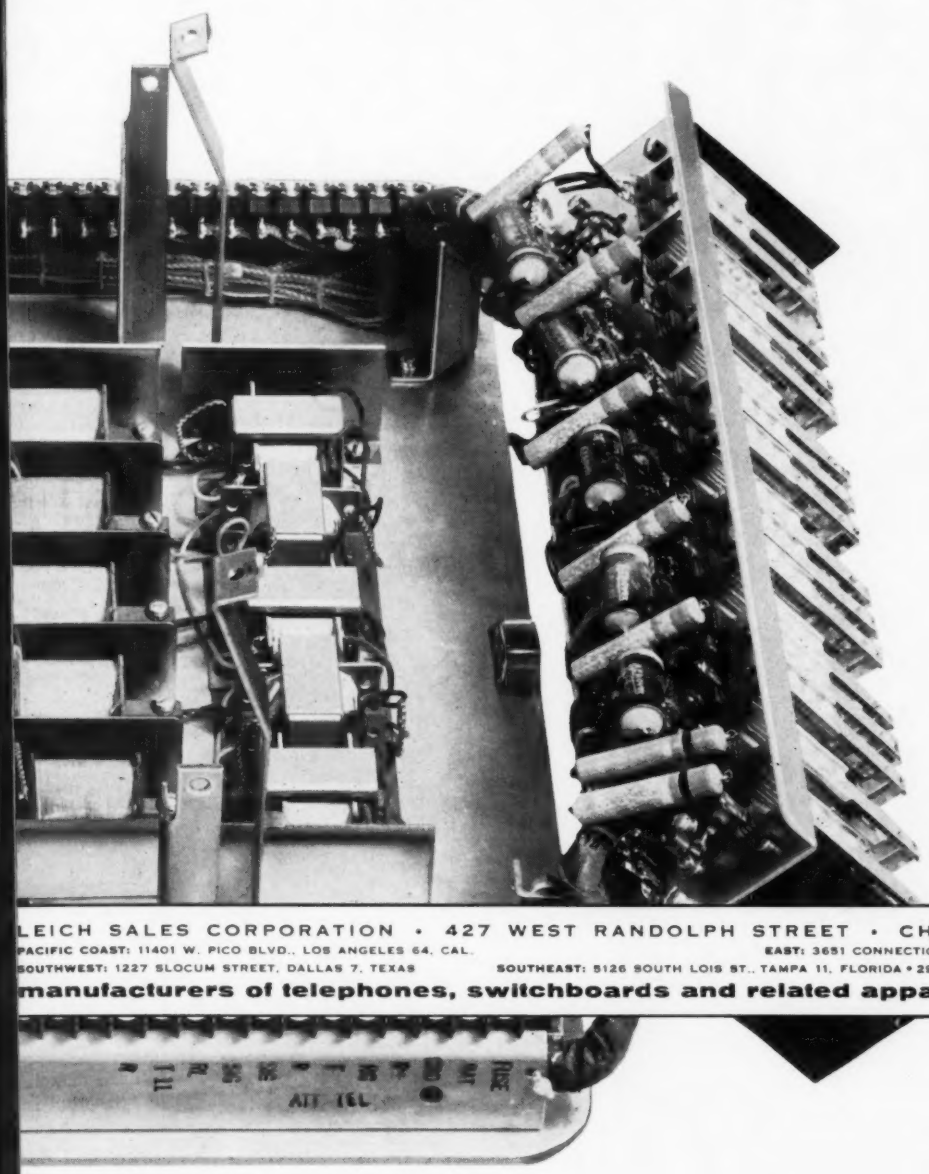
Here are the nerves and muscles laid bare. With a built-in multiple on line keys and trunk keys, Leich's Cordless PBX eliminates many sources of trouble. Add to this, precision assembly and high quality components, and you have a superior PBX – one that will serve *you* and *your customers* as a faithful servant for years.

CAPACITIES: 12, 16, or 20 lines with 5 connecting circuits, and 5 central office trunks. Stock delivery on 20 and 12 line models.

STANDARD FEATURES: Prompt recall, channel busy lamps, re-ring features, through or attendant dialing, through supervision, night service, trunk holding and conference calls.

OPTIONAL EQUIPMENT: Hand generator, tie trunks, extra line relays and key telephone are available.

Ask your Leich representative for complete details.



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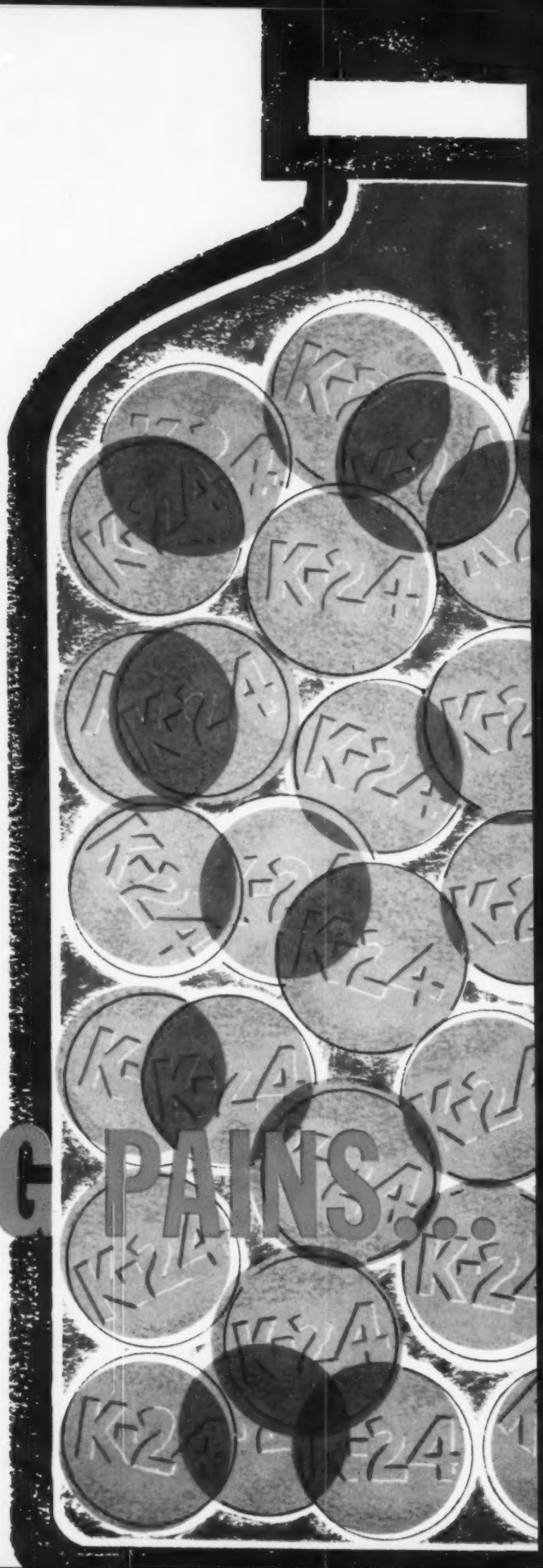
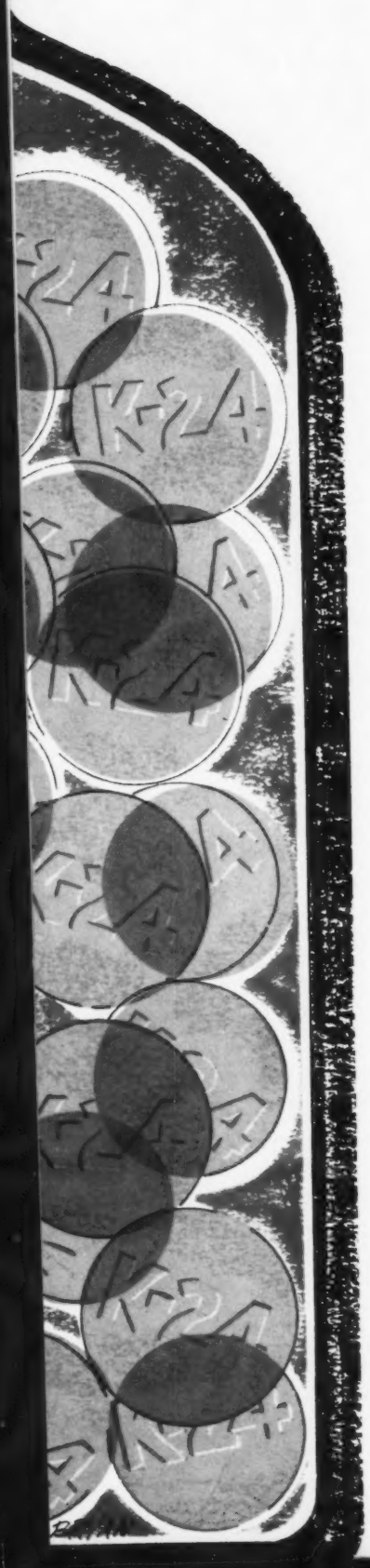
manufacturers of telephones, switchboards and related apparatus since 1907

FOR FAST, FAST, FAST RELIEF OF GROWING PAINS.





ITT KELLOGG K-24 SHORT HAUL CABLE CARRIER

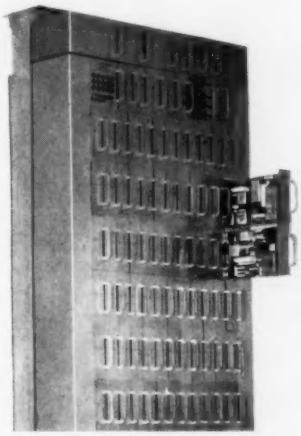
What do the country's largest systems do to meet growing in-and-around-town circuit demands *fast*, and with minimum financial outlay? More and more of them are turning to ITT Kellogg K-24 all-transistor Synchroplex Carriers with profitable results.

Designed specifically for short distance applications of 5 to 20 miles, a single K-24 carrier creates twenty-four new channels per existing two cable pairs, while maintaining full toll-standard transmission over all subscriber circuits.

By employing economical ITT Kellogg carriers to *multiply* present cable capacities, independent companies all over the country are finding they can meet the immediate demands of growing subscriber lists—and at the same time, defer major expenditures, or re-assign investment capital to more productive areas.

Printed wiring and completely transistorized for long, trouble-free service at low initial cost . . . plug-in modular unit design provides flexibility, ease of expansion . . . frequency staggering with all-new circuit design for low noise, highest grade performance . . . availability of regulating repeaters assures uniform transmission . . . equally adaptable to underground or overhead cable lines . . . rugged, compact, easy to install.

For complete details and technical information, or an appraisal of your requirements, see your local ITT Kellogg Representative or call or write the ITT Kellogg Regional Office nearest you.



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ENCORE!
ENCORE!
ENCORE!

Six smash hits

BELL

MARGE and GOWER CHAMPION
ROSEMARY CLOONEY
MAHALIA JACKSON
ROBERT PRESTON
ZINO FRANCESCATTI
BALLET RUSSE DE MONTE CARLO
EDDIE CONDON JAZZ ALL-STARS
MARILYN VAN DERBUR, your hostess
DONALD VOORHEES and the Bell Telephone Orchestra

Six outstanding performances from three seasons of award-winning Telephone Hour programs will be re-created on the final Bell Telephone Hour for this season, Friday, April 28.

Lovely Marilyn Van Derbur will be hostess for "Encore." Among the acts she will introduce are:

The Ballet Russe de Monte Carlo dancing to "Gaite Parisienne"
Robert Preston singing "Seventy-six Trombones"
Marge and Gower Champion in "Dancing to Nursery Rhymes"
Mahalia Jackson singing "Summertime"
Rosemary Clooney singing Irving Berlin hits

The color commercials on "Encore" will feature Home Interphone, Telephone Operators and Long Distance.

The evening is Friday, April 28. The show is "Encore." Make it a date to enjoy the final Bell Telephone Hour for this season before our usual summer hiatus. Please consult your local TV listings for time and channel.

from past Telephone Hour shows

TELEPHONE HOUR

FRIDAY, APRIL 28

NBC-TV · live and in color

Presented by the

BELL TELEPHONE SYSTEM

NEW Revenue

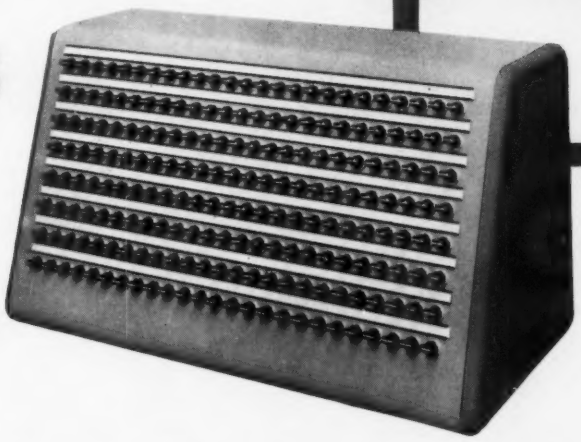
Message-Waiting Service for Hotels

When a guest does not answer his phone, the attendant takes the message and operates key on Message-Waiting Service cabinet.

Flashing light is activated on the P-A-B-X or P-B-X extension. When the guest returns, the light signals him to call the attendant for a message. The service does not interfere with normal telephone operation.

Builder!

and Motels



Here's a new convenience for your hotel and motel subscribers to offer their guests. It's called Message-Waiting Service—another auxiliary feature for P-A-B-X and P-B-X systems.

With Message-Waiting Service, a hotel or motel guest receives phone messages the instant he returns to his room. Here's how the service works: all calls are answered by the P-A-B-X or P-B-X attendant, who rings the guest's phone. If there is no answer, the attendant takes the message and operates a key on the cabinet. This activates a light on the guest's phone. When the guest returns, the light is a signal to call the attendant for a message.

Message-Waiting Service includes an attendant cabinet, plus special Type 80 phones with built-in lamps. The cabinet is equipped with 60 keys (expandable to 100), or 140 keys (expandable to 200). Control equipment is separate and wires easily into switching equipment.

Your hotel and motel subscribers will welcome this new convenience. More conveniences mean more repeat business. And keep in mind that Message-Waiting Service is an auxiliary feature which helps you *sell* P-A-B-X and P-B-X systems.

AUTOMATIC ELECTRIC

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

FREE Sales Aid!

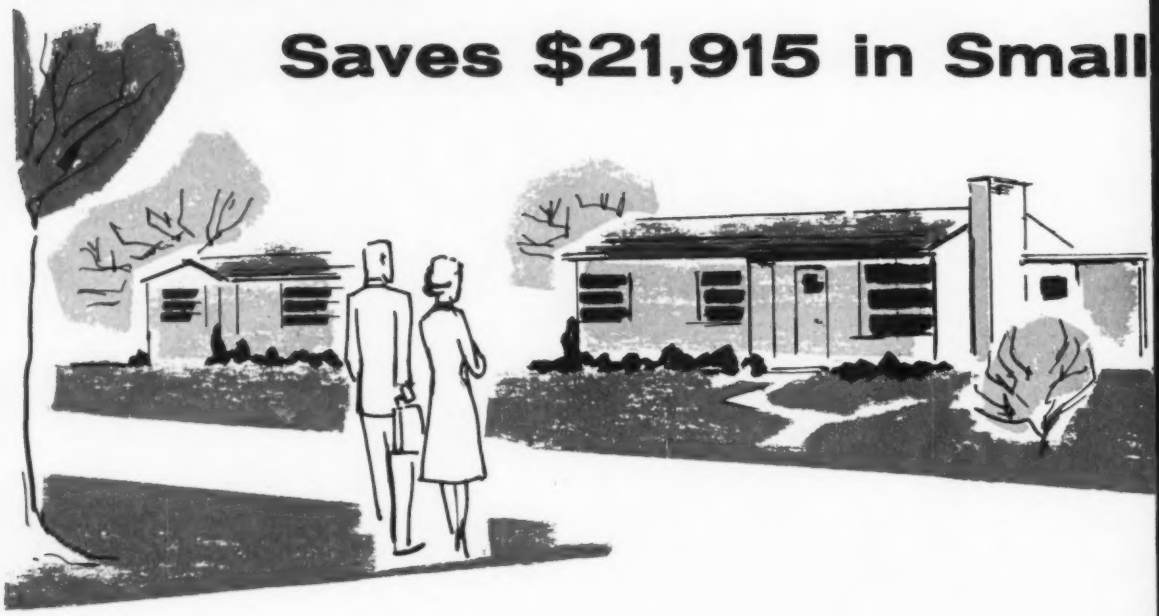
This four-page folder helps you promote Message-Waiting Service. Directed to the hotel or motel man. Tells him exactly how the system works and how he benefits from it. Helps you make the sale! Let us know how many copies you'll need. Write Automatic Electric Sales Corporation, Northlake, Illinois.

LEICH

LINE CONCENTRATOR

PROFITABLE USES

Saves $21,915 in Small



Imagine! A unit that saved $21,915 while serving a small growing community.

That's exactly what Leich's Line Concentrator did by cutting outside plant costs. Instead of serving each line over a separate wire pair, it concentrates a number of subscriber lines over a much smaller "high usage" trunk group.

The cost-cutting story: This small community was fed over a 26 pair cable which was working at 100 per cent capacity. There was an immediate need for 8 more lines with a projected 15 year ultimate of 10 more lines for a total of 18. Six of the existing lines and 7 of the new lines required long line adapters.

The cost estimate for an additional 26 pair, 19 gauge cable plus loading was $30,000.

The cost of the Line Concentrator plus weatherproof cabinet and installation labor was $4,785. In addition, it was necessary to move the distribution point of the Concentrator's subscriber unit back toward the central office to get within trunk limits for Concentrator operation. The cost was an additional $3,700 for a total of $8,485.

This figure was reduced to a net cost of $8,085 by applying long line adapters to the 9 Concentrator trunks rather than 13 long lines.

Savings from use of the Concentrator: $21,915!

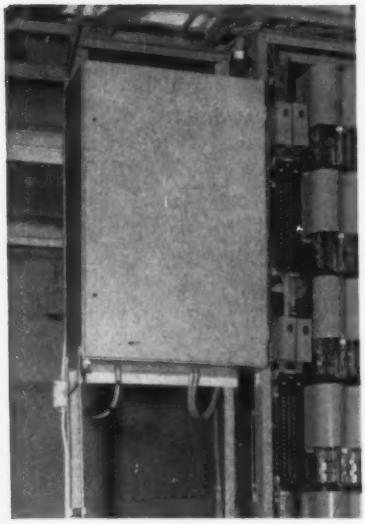
LEICH GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

Community

SUBSCRIBER UNIT



EXCHANGE UNIT

Write for Brochure of Line Concentrator Facts and Applications.

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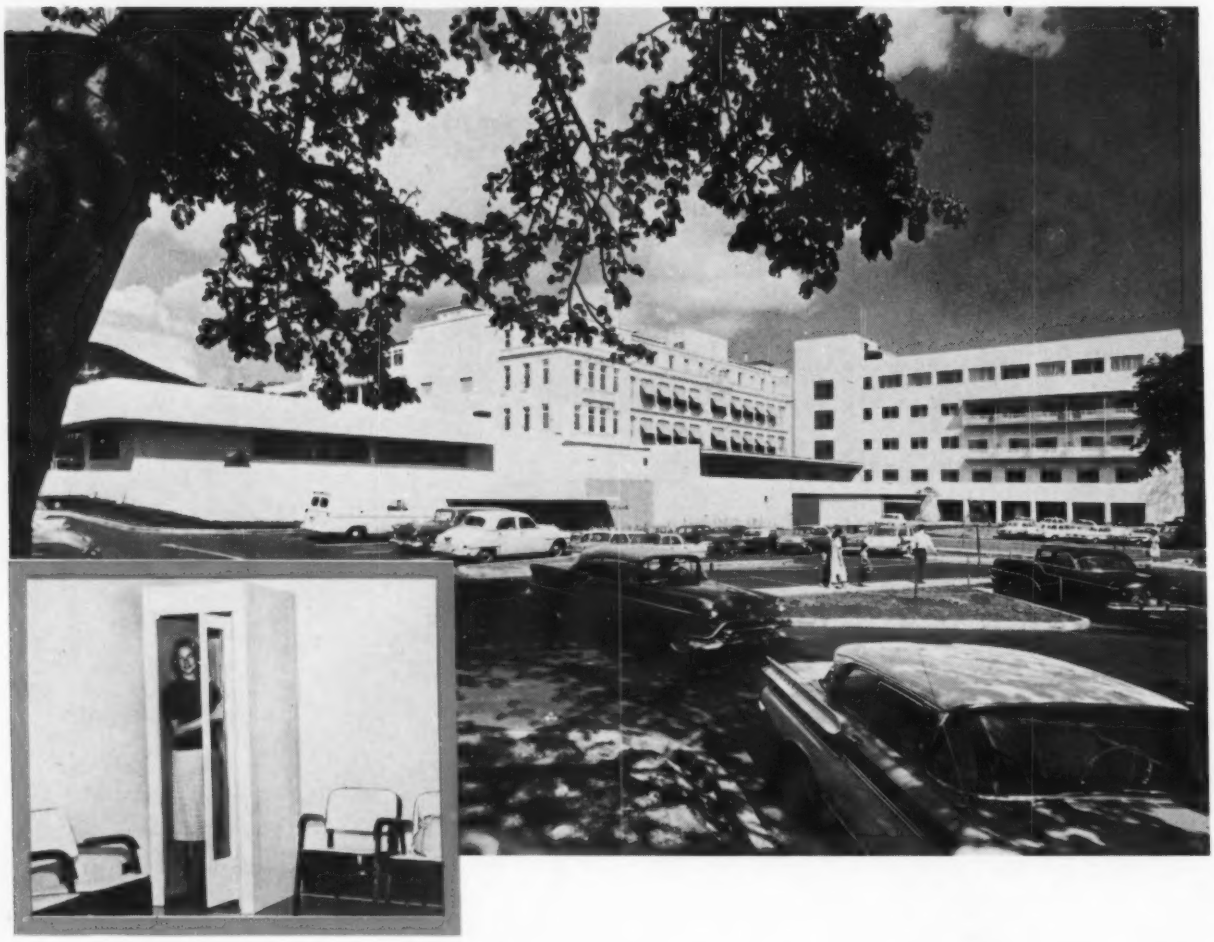
manufacturers of telephones, switchboards and related apparatus since 1907

USITA

a vital influence in all 50 states

There are no boundaries in the function of the USITA to encourage the extension of service of independent telephone companies to their subscribers. Alaska to Hawaii and throughout continental U.S.A., the trend among Independents to provide better and more dependable communications systems is a steadily growing one. This upgrading accounts for the choice of Sherron steel booths in the modernization programs of more and more Independents.



You're not likely to see many all white telephone booths. The one in the above inset is in Honolulu's Queen's Hospital, and illustrates the adaptability of Sherron steel booths to any location, any environment, any decor. Hawaiian Telephone will soon complete the installation of a series of Sherron steel multiple booths at the new Honolulu International Airport. This latest project typifies the services provided by this company throughout the Hawaiian Islands.

as evidenced by HAWAIIAN TELEPHONE COMPANY

SEE OUR CATALOG IN SWEET'S

INDEPENDENT

Sherron ACOUSTIC T SEE-THRU STEEL—STAINLESS STEEL OUTDOOR AND INDOOR TELEPHONE BOOTHS

There's a Sherron booth for every location and budget in either zinc coated or stainless steel

SHERRON METALLIC CORP., 1201 FLUSHING AVE., BROOKLYN 37, N.Y.

WHAT COULD BE MORE LOGICAL?

It is man's inherent nature that progress engenders progress, that improvement breeds improvement. So, it was only natural that when the first automatic dialed telephone call was completed, far-sighted telephone engineers began to envision the day when all calls—including toll calls—would be made automatically.

First, it was necessary to make long distance communications practical. With the invention of the vacuum tube, it became possible to achieve efficient transmission over great distances.

With this obstacle overcome, the problems became more specific.

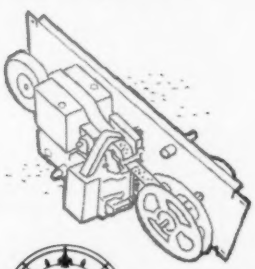
"If we are to achieve automatic toll calling," engineers determined, "we must develop equipment to replace the toll operator."

Even before such equipment could be developed, however, it was necessary to establish a philosophy upon which the design of such equipment could be based. Numbering plans and area codes had to be worked out. An over-all master plan had to be evolved that could eventually serve as the skeletal framework for a completely integrated network, nationwide in scope and practical in everyday application.

Basic premises for equipment design established that automatic toll handling must be accomplished with such simplicity that subscribers could and would dial their own toll calls and that the equipment could perform operator functions more quickly and efficiently than an operator

At North Electric, both the broad concept and the application problems were recognized. Working toward a now visible goal, with a full understanding of where the Independents would fit into this still envisioned DDD network, North engineers developed, installed and cut-over one of the first Independent commercial automatic toll ticketing networks. This was no experimental installation. It is still working today!

North engineers, working from this broad base of experience, have improved and refined North AuTollizer® equipment so that today, as for the past decade, no other automatic toll ticketing equipment can perform so efficiently and so profitably for you.



If you're planning automatic toll handling, look first to...

THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

GALION, OHIO

NORTH

No. 1 in a series of factual presentations on North AuTollizer.

There's a GOULD Stationary Battery for every job . . .

1 **Gould Planté Batteries** are the aristocrats of the stationary line . . . unexcelled for dependable performance. The Planté with pure lead plates assures minimum self-discharge, practically eliminates loss of internal cell capacity. Delivers powerful surges or steady, sustained flow whenever needed. Requires less maintenance than any other battery.

2 **Gould Calcium Batteries** are noted for unfailing service on applications requiring long battery life. Scientifically-balanced positive grid and active material result in maximum length of service. Especially applicable where battery space is limited and where long life is paramount.

3 **Gould Kathanode Batteries** offer reliable full float or partial cycle operation. Give added power retention, instant reaction at high discharge rates. Lower in cost, ideal for planned amortization programs.

Each model is available in the new Gould Plastrite Jar . . . light, compact, resistant to heat and breakage . . . the perfect outer protection for your Gould Stationary Battery. For more complete information, call your local Gould office listed under "Batteries—Industrial" in the Yellow Pages. Gould-National Batteries, Inc., First National Bank Building, St. Paul 1, Minnesota. In Canada, write to Gould-National Batteries of Canada, Ltd., 1819 Yonge Street, Toronto, Ontario.

More Power to You from **GOULD**

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

President Kennedy's message on regulatory reform received favorably . . . recommendations more restrained than earlier Landis proposals . . . include "Administrative Conference" and suggestions to break FPC log-jam. Geneen, president of ITT, urges federal backing for U. S. investors abroad.

THE LONG-AWAITED special message to Congress on improving the effectiveness of the federal regulatory agencies was sent up to Capitol Hill on Apr. 13. It created a very favorable impression. There was little in it that any disinterested observer could seriously question as far as the recommendations are concerned. At the same time, it was a little anticlimactic because it would appear that President Kennedy is backing away from the more controversial proposals of his principal regulatory adviser, James M. Landis.

The most controversial Landis proposal—to establish a White House "Overseer" to ride herd on the federal regulatory commissions or for other special White House "Co-ordinators" in the field of transportation and communication—was not mentioned. However, President Kennedy did touch upon the importance of co-ordinating the operations of the federal agencies in a general way, so that they do not work at cross-purposes.

It is by no means certain, however, that the President has given up on his earlier determination to have more say about how these agencies are operated. The moderate scope of his special message to Congress would appear to indicate that he is, as always, a political realist. He has sensed that Congress, in its jealous regard for its powers over the regulatory bodies (which were created by acts of Congress), would not surrender such powers at this time. So, the President is willing to settle for something less in order to get legislation going along the less controversial lines of procedural reform. After the President has obtained greater practical control over these agencies through additional appointments to their membership, he will be in a better position to move in, with or without special congressional authorization, and exercise some White House influence, whether it is called by that name or something more diplomatic.

Streamlining Federal Agencies

Most of the President's recommendations go to the very important question of procedural reform, stepping up the lag in rate cases and breaking the bottlenecks, mainly at the Federal Power Commission. What has happened there, through the backing up of nearly 4,000 gas rate cases, has become a minor scandal. As any informed observer knows, the blame certainly can't be put entirely on the commission itself. There were a number of circumstances—court action, congressional inaction, gas producer resistance to regulation, and other factors — which have caused this traffic jam. The President did not attempt to blame anyone. But he does want something done about correcting the situation. And so does everyone else, including the Federal Power Commission.

In another general area the President was critical of what he called the "iron curtain" drawn between agencies operating in the same general field, which resulted in a failure to work out over-all policy co-ordination. The activity of the Interstate Commerce Commission, for example, in trying to preserve vanishing railroad passenger service in many cities while the Civil Aeronautics Board keeps piling on new air-line operating authority, is a prime target of this.

Again, nobody is to blame except perhaps a failure of Congress to work out a courageous long-range over-all transportation policy and pass the necessary laws to get it going. The ICC is doing exactly what it is supposed to do —regulate the railroads and the interstate motor carriers without regard to other forms of transportation. Congress and the courts have both told the ICC, in effect, to keep its nose out of other forms of transportation. The CAB was likewise set up to operate entirely within the framework of commercial air-line control without regard to its impact on other forms of transportation. And so we have a good example of the left hand not knowing or caring what the right hand does or vice versa.

The Regulatory Conference

Probably the best and most immediate effect of the President's recommendations is to lend his support to the establishment of a so-called "Administrative Conference" somewhat similar to the Judicial Conference created in 1922. Like the Judicial Conference, which gives Congress and the Executive branch the benefit of continuous advice from the sitting judges on matters in the field of judicial operation, the Administrative Conference

would be in a position to keep a constant watch on procedural matters in the field of regulation.

This conference has already been set up, in its preliminary stage, by directives of former President Eisenhower; and the individual who took the lead in this development then will probably continue to head up the organization under the Kennedy administration — E. Barrett Prettyman, chief justice for the U. S. court of appeals for the District of Columbia circuit. It will be composed of general counsel as well as special legal practitioners and others who will sit as a supervisory board to test and report on procedural problems.

President Kennedy, after reviewing the need for such a group, left the impression in his message that he felt that immediate impetus could be given by an Executive order (which he proceeded to issue on Apr. 13) creating such a board. Probably Congress will have to come up with some supplemental legislation by way of appropriations or carrying out changes which the Administrative Conference may recommend. President Kennedy said on this:

"The process of modernizing and reforming administrative procedures is not an easy one. It requires both research and understanding. Moreover, it must be a continuing process, critical of its own achievements and striving always for improvement.

"Judicialization—the method of determining the content of a controversy by processes akin to those followed by the judiciary—may well be the answer in many cases.

"But new procedures for the analysis of facts, based upon more informal methods and mobilizing the techniques of other disciplines, can be the answer in other cases, provided always that the fundamentals of due process of law are maintained.

"There can be no single set of conclusive and abiding formulas appropriate for the effective dispatch of all the diverse and ever-changing issues that these agencies are called upon to resolve.

"It is for this reason that I have today issued an Executive Order calling at the earliest practicable date an Administrative Conference of the United States, to be organized and headed by an illustrious jurist and a distinguished council of lawyers and other experts from the administrative agencies of this government, the bar, and university facilities.

"The council will consider the questions I have discussed, along with the desirability of making this conference, if it proves itself, a continuing body for the resolution of these varied and changing procedural problems. . . .

"The results of such an Administrative Conference will not be immediate, but, properly pursued, they can be enduring. As the Judicial Conference did for the courts, it can bring a sense of unity to our administrative agencies and a desirable degree of uniformity in their procedures.

"The interchange of ideas and techniques that can ensue from working together on problems that upon analysis may prove to be common ones, the exchanges of experience, and the recognition of advances achieved as well as solutions found impractical, can give new life and new efficiency to the work of our administrative agencies."

Convention Calendar
1961

Association	*Date*	*City*	*Hotel*
Wisconsin	May 2 and 3	Milwaukee	Plankinton House
Indiana	May 10 and 11	Indianapolis	Claypool
Illinois	May 17, 18 and 19	Peoria	Pere Marquette
Kansas-Missouri*	May 22 and 23	Kansas City, Mo.	Continental
Pennsylvania	June 5, 6 and 7	Pocono Manor	Pocono Manor Inn
Washington-Oregon*	June 15 and 16	Victoria, B. C.	Empress
New York	June 19, 20 and 21	Schroon Lake	Scaroon Manor
California	June 26, 27, 28, 29 and 30	Honolulu, Hawaii	Hawaiian Village
Alaska	Aug. 21, 22 and 23	Palmer	Unannounced
Tennessee	Sept. 6 and 7	Nashville	Hermitage
Arkansas	Sept. 11 and 12	Hot Springs	Arlington
Georgia	Sept. 14 and 15	Jekyll Island	Corsair Motel
Michigan	Sept. 19, 20 and 21	Grand Rapids	Pantlind
Nevada	Sept. 19, 20 and 21	Elko	Stockmen's
Rocky Mountain	Sept. 20, 21 and 22	Boise, Ida.	Owyhee
West Virginia	Sept. 26 and 27	Wheeling	Olgebay Park
USITA	Oct. 8, 9, 10 and 11	Chicago	Conrad Hilton
South Carolina	Oct. 23 and 24	Clemson	Clemson House
Virginia	Oct. 26 and 27	Roanoke	Roanoke
Oklahoma	Nov. 8 and 9	Skirvin	Oklahoma City
Alabama-Mississippi	Nov. 13 and 14	Birmingham	Thomas Jefferson
Florida	Nov. 26, 27 and 28	Miami Beach	The Carillon
North Carolina	Dec. 4 and 5	Pinehurst	Carolina

*Joint meeting

Antibottleneck Proposals

After referring to the incredible backlog of gas rate cases pending before the Federal Power Commission, the President made some specific recommendations for congressional action which may be of interest even to telephone companies because they may foreshadow a pattern to be carried out in the Federal Communications Commission area, and at the state levels, in future years. First, he suggested that the membership of the Federal Power Commission be increased from five to seven, so that the commission could be divided into hearing panels.

As previously pointed out in this department, this panel division within a seven-man commission was not very successful with the Federal Communications Commission in 1934. At least it was later abandoned. But that does not mean that it would not work with the Federal Power Commission because of some different circumstances in the two situations.

Under the old FCC division of duties, the commission had three panels not two. It also had examiners. There was also provision for automatic appeal to the full FCC "en banc." This meant that in most controversial cases there were three levels of proceedings to be gone through, before the cases ever emerged from the commission — once before the examiner, once before the panel, and once before the full commission. If the parties decided to appeal further there might be two court proceedings piled on top of that — once before the U. S. circuit court of appeals and once before the U. S. Supreme Court.

President Kennedy suggested, however, another approach in his recommendation on the FPC, mainly by making it tougher to take an appeal within the commission. First of all, he would step up the authority and prestige of the examiners, so that their opinions would be final in a good many cases, leaving the top level of the commission free to do other things. In other words, there would be no automatic right of appeal even from the examiner's decision. A dissatisfied party in that case would have to go right into the ap-

(Continued on page 106)

A B C of the Telephone

by Frank E. Lee

TALK ABOUT a big industry—the telephone industry is one of the biggest (if not *the* biggest) in the world today. In state after state the largest single company is a telephone company. And, of course, there are hundreds of other operating telephone companies in these same states. This isn't too surprising in view of the 20 league strides practically every telephone company is taking to keep pace with the continually growing demands for ever-changing communications service.

What may be a little surprising is the big—real big—automotive fleet being operated by the telephone industry. For sheer numbers the telephone fleet ranks among the largest in the country and in the world. Probably no other industry uses as many of such a variety of cars and special purpose vehicles.

The automotive fleet is a sizable capital investment for any telephone company. Operating these large fleets costs a good amount of money, too. As if these two points aren't enough in themselves, the fleets do not earn revenue to offset their constant fixed charges and annual operating costs. This could lead to a rather bleak outlook as far as the automotive fleets are concerned. However, there are a number of positive advantages to be entered on the credit side of the ledger for the telephone fleet. These articles will discuss the various aspects of fleet operation to help telephone companies compare their fleet operating procedures with today's concepts of this important function.

What the Fleet Should Do

A good communications system needs good transportation. Plant people must visit equipment installations at customer premises and in telephone buildings. Equipment and tools must be moved from one place to another during any kind of weather, and at practically any time of day. These visits and this moving of supplies and tools must be on schedule because communication is an essential commodity. Delays cost money in time and service lost. In a nutshell, these are basic reasons why good transportation—good automotive transportation—is so important to the telephone company. The automotive fleet provides four basic services to the telephone company, as follows:

(1) *Moving supplies and equipment.* This could range from a telephone instrument to a reel of cable, a switch frame, or a standby diesel generator.

(2) *Hauling tools.* An almost countless number and variety of tools are used for construction, installation, and maintenance of the telephone plant.

(3) *Transporting people.* Supplies, equipment, and tools aren't much good until telephone people are on hand to fit all the pieces together.

(4) *Public relations and company image.* These are aspects of fleet operation that too often are discounted or overlooked.

The jobs of transporting supplies and equipment, hauling tools, and carrying people are easily identified as fleet services. However, the fourth service—public relations and enhancing the company image—is a service that can add immeasurably to the profit potential of fleet operation.

The telephone fleet is made up of a wide variety of vehicles such as installation and maintenance service trucks, tractor-trailer trucks, special purpose vehicles, off-the-highway units and fleet passenger cars.

A typical vehicle in the telephone fleet is the new type truck designed for the installer-repairman, shown in *Fig. 1.* These trucks combine a large capacity van-type body with the handling ease of a compact chassis. The interior

About These Articles on Fleet Operations

PART 98. The Telephone Fleet —A Vital Link in a Good Communications System.

This is the first of a series of several articles by Mr. Lee on the operation of automotive fleets in the Telephone Industry. Mr. Lee is known for his "ABC OF THE TELEPHONE" articles which have been appearing in TELEPHONY for a number of years. He also is the publisher of the reprint books of the ABC series which are being used in many telephone company training programs.

In addition, Mr. Lee is a well-known author in the automotive industry, and has contributed numerous articles over the years to many of the leading automotive service and fleet magazines.

With this background, firmly established in the telephone and automotive industry, we feel Mr. Lee is especially qualified to write about the automotive fleets used in the telephone industry. TELEPHONY is pleased to have the opportunity of presenting these new articles in the "ABC OF THE TELEPHONE" series.

Fig. 1

Fig. 2

of the body is fitted with equipment racks, material storage drawers and ample space for carrying odd-size boxes or packages. The completely enclosed material and equipment carrying area enhances the appearance of the truck. As a result, the truck has a neat, trim look while traveling along the highway or while parked in front of the customer's residence or place of business.

A typical special purpose unit in the telephone fleet is the combined trencher and buried cable laying vehicle, shown in *Fig. 2*. The cable reel dolly moves along the side of the trenching unit, thus permitting the cable to be buried to the proper depth as the trench is opened.

The special purpose truck, shown in *Fig. 3*, carries an earth boring machine and pole setting boom mounted on an open platform body. The earth boring machine and winch are driven by a power take-off mechanism mounted in the center of the truck bed.

A familiar sight on the nation's highways is the typical telephone service truck equipped with a utility body, illustrated in *Fig. 4*. Trucks of this type are used for a variety of purposes. As a result, the specific use of the truck would determine the variety of equipment, tools, and supplies carried in the convenient-to-use body. These trucks serve a specific function. However, the clean simple lines and crisp styling create a favorable impression while the truck is rolling along the highway or standing at the side of the roadway.

On Display Every Day

The telephone fleet travels over practically every mile of highway, city thoroughfare, village street, country road, and private drive in the country —at some time or another. During any given day the average fleet unit will be exposed to hundreds, perhaps thousands of people. For this reason, the public relations and company image aspects of telephone fleet operations should always be given careful attention and consideration.

This important factor will be emphasized in these articles because a flagrant violation of effective fleet operating techniques—by large as well as small telephone companies—could be caused by lack of attention to factors affecting public relations and company image.

How Big Should Fleet Be?

The telephone automotive fleet should be big enough to serve the transportation needs of the company without creating delays in providing or maintaining communications service. This means the fleet must be geared to the communication service needs of the company. The fleet is not doing the job whenever telephone service is delayed because of a lack of transportation. Providing a fleet with these capabilities — and still holding the fleet investment to a minimum—is an important job.

Perhaps the exacting task of matching fleet units with service needs is a major reason why participating in fleet operations offers so many challenges to an individual's initiative and performance. This applies to the automotive serviceman whose operations are geared to keeping the fleet rolling and on the job. This also applies to the manager of fleet operations and his staff who are vitally concerned with fleet operation, maintenance, and replacement.

Thus, how big should the fleet be

Fig. 3

Fig. 4

Fig. 5

Fig. 6

must be answered by the needs of each company or operating location. Some factors to be considered are:

(1) A car or truck is a tool used by many individual plant craftsmen who install and maintain communications equipment on customer premises. Each craftsman engaged in residential service operations generally should be provided with a passenger car or small service truck. An exception might be the new man in the first few weeks of his training.

(2) Craftsmen installing larger switchboard or key telephone equipment for business customers may not require individual fleet vehicles. Generally, these installations require from several days to a few weeks' time. After an initial delivery of equipment and supplies, an individual fleet vehicle would not serve a useful purpose. Generally, men engaged in this type of work are serviced by a supply vehicle making deliveries as required.

The supply van, shown in *Fig. 5*, is a fore-runner of the new, small, van-type units being used for delivery and service operations.

(3) Administrative and executive personnel requirements of fleet vehicles will vary in accordance with the function involved. Included in this group are people engaged in commercial, traffic, engineering, marketing, and accounting activities.

The decision to provide or not to provide an individual fleet vehicle should be based on individual requirements. A person using a vehicle for a considerable portion of every day should have an individual vehicle. A person using a vehicle on an occasional basis can share with others with similar requirements. Usually these requirements can be met by providing a group or pool of vehicles to be used for a specific purpose.

Again, the number of vehicles should be based on need. Delay to individuals caused by too few vehicles in a group or pool should not be tolerated. Remember, the fleet exists to serve the needs of the telephone company—the company doesn't exist merely to operate an automotive fleet.

The problem of establishing an adequate sized fleet is similar, in many respects, to selecting switching equipment to handle a traffic load. Additional vehicles can be added to the fleet if a greater need develops. The stable market for used cars and trucks enables scaling the fleet downward, if necessary, without suffering a substantial capital loss.

The attractive half-ton pickup truck, shown in *Fig. 6*, is typical of the fleet vehicles for which there is a relatively stable resale market. There are many telephone fleet jobs that can be handled by this truck with a standard pickup body. Trucks with special bodies should be used where the special purpose body is essential for a particular job. However, the use of standard bodies, wherever possible, enhances the fleet resale value.

The aerial bucket is only one of the many extremely versatile features of the special purpose aerial cable installation truck, shown in *Fig. 7*. Other features of the truck are a cable reel trailer with power operated reel lift; a smooth operating cable payout system, plus ample tool and material storage space.

In practically every sense of the word the truck shown in *Fig. 7* is a special purpose vehicle. The aerial bucket could be used for certain plant maintenance operations, such as cable repair, tree trimming, or similar work. However, the primary use of the vehicle is for aerial cable installation. The special equipment makes the unit a highly efficient tool for this job. Actually, this truck will pay for itself in a relatively short period of time through important savings in aerial cable installation cost. From a resale standpoint, however, the market for a complete truck of this type is quite limited. After a few years the body and aerial bucket will be placed on a new cab and chassis and the unit will be ready for more years of money saving service.

(To Be Continued)

Fig. 7

The Power Contact Hazard

Actions to prevent contact between power and telephone lines recommended. Also suggests protection to reduce damage to property and to prevent personal injuries in case of accident.

By RAY BLAIN

THE JOINT USE of poles by power and telephone companies, and the extension of power service into rural areas — often with insufficient clearance between the two services— have created certain hazards which can cause serious trouble unless certain precautions are observed.

This problem requires the cooperation of the two services in planning, engineering, constructing and maintaining the joint or parallel facilities. Careful consideration must also be given to adequate structural arrangements and physical separations to minimize the possibility of accidental contact of power and telephone lines. It is likewise necessary to coordinate electrical protection in order to minimize hazards to persons, and to limit plant and property damage in the event of accidental contact.

A Lasting Problem

While there is a trend in telephone plant toward underground construction which will, of course, reduce the danger of accidental power contacts, existing and new aerial plant will be with us for many years into the future. For this reason, it appears desirable to realize the damage and danger involved in an accidental power contact with telephone plant and how they may be prevented or minimized. With a view to clarifying the danger and the troubles that may be caused by an accidental power contact, the following actual case histories are cited.

Case No. 1. A troubleman detected ac power on the main frame of a 200-line dial switchboard. The ac appeared to be on all pairs of a 400-pair cable and its source could not be determined. The troubleman called for help and for the next four hours a total of seven troublemen covered the rural lines checking for a power contact. Finally, these men started cutting jumpers used to connect the rural lines to aerial cable. When one jumper was cut at the *last* location, naturally, the ac was removed from the cable. The trouble was then located where a tree had fallen into a 4,800-volt power lead causing the power wires to contact an open wire rural line. Neither the power nor telephone line was broken. The power company had not received any indication of trouble.

Carbon Blocks Burned

After the power cross was cleared, the following conditions were observed. The ac power had come in over the telephone open wire line, through the 83-A protector and into the cable. The carbon blocks in this protector were all burned, even though only one pair of blocks had been exposed to the power. Trouble was located in the cable approximately 4,000 feet from the terminal where several pairs were burned together. The ac power traveled over the cable to the main frame where nearly all heat coils were found open and the carbon blocks severely burned. Many of these blocks were welded together and had to be replaced. Fortunately, however, none of the dial switching equipment was damaged, even though the ac power was on the main frame for over four hours. This was probably due to the fact that the heat coils operated almost instantly, opening all lines.

During this time, many of the telephones out on the line began ringing. Harmonic ringing of 16⅔, 25, 33⅓, 50 and 66⅔ was used. During this time, also, many of the telephones started to smoke. Some of the subscribers fearing that a fire might start, cut wires or pulled telephones loose from the wall. Others went outside and removed fuses from substation protectors. The trouble condition was uniform throughout the exchange area and was not limited to the exposed line. Many telephones had damaged condensers, ringer coils and switchhook contacts that required replacement.

Protectors in Reverse

There is one peculiar condition that may have had some effect on this particular trouble. When the main frame was installed, the protectors were inadvertently connected in reverse. Under this condition, the line equipment was grounded and the cable pair side was open when a heat coil operated. Normally, the cable pair should be grounded and the central office side open when a heat coil operates. It may be that this mistake, made by the installer, prevented damage to the dial switching equipment. There are cases on record in which protectors were connected in the conventional manner, and a similar power cross destroyed central office equipment.

It was most fortunate, in this case, that none of the telephone company employes or customers were injured by this dangerous situation which was on the system for a period of over four hours. This is no less than miraculous when we consider that so many of the subscribers tampered with the telephones and protectors, not realizing that they were being exposed to 4,800 volts.

Case No. 2. Some years ago, following a hurricane in one of our southern states, a new 4,000 line dial exchange was put out of service for a period of 10 days as the result of a power cross. This trouble was due to the fact that the power company failed to clear all of its lines that had fallen across telephone circuits prior to the restoration of power service.

Wax Impregnated Insulation

This particular telephone exchange, at that time, used A-type central office protection. With this type protection, the outside cable pairs terminate on connecting blocks and the switchboard lines connect to the main frame protectors. Then, to add to the hazard, the jumper wire used on the main frame had an insulation that was wax impregnated.

When power was restored, the high voltage came into the office over the outside cable pairs, started a fire, and completely destroyed the tipping cables, switchboard cable and the main frame jumpers. The tipping cables, terminal blocks, main frame protectors and cable from the main frame to the line switches had to all be replaced. Miraculously, though, the dial switching equipment was not damaged.

Case No. 3. Some few years ago, REA experienced considerable damage to telephone plant resulting from an accidental power contact. This occurred when one-phase wire of a three-phase, 7,200/12,500-volt distribution circuit broke at a deadend and fell across a four-wire telephone lead that crossed under the power line. At the time of contact, neither the telephone company nor the power company was observing REA recommended protection practices. The REA then made a study with the intent of outlining what is believed to have been the cause of the power failure, its effect upon the telephone plant and, finally, what action could have been taken to have provided better protection to the telephone plant.

Inspected Before Failure

It was determined that the power company's substation protective devices had been inspected and a monthly routine check performed 10 days prior to this failure. Moreover, that by the use of artificial loads, the relays were found to be operating within the limits specified on the electrical data sheet for this substation. Protection for short circuits on the distribution line was provided at the substation by a three-phase circuit breaker and associated phase and ground relays. This device consists of a three-phase 14.4 KV oil circuit breaker, equipped for dc and ac close, the dc potential being supplied by storage batteries.

It was later determined that the relay trip coil, associated with the phase wire which failed, had previously developed a short circuit to ground and discharged the breaker storage batteries. This left the breaker without any potential for tripping, consequently, the line remained energized. The contact with the telephone line existed for a period of 20 to 25 minutes. It is not certain whether, at the end of this period, the primary substation fuse associated with this phase operated to de-energize this phase or that the phase wire burned itself clear of the telephone lines.

Total Cost $1,100

The telephone plant was subjected to a sustained potential of about 7,200 volts and, on the basis of rough calculations, it is believed upward of 100 amperes of short circuit current for the 20 to 25-minute period. The total cost of repairing the following damage to the telephone plant was about $1,100:

The station protectors and drop wires were burned off houses at seven locations.

Eight power contact protectors were burned off crossarms and damaged beyond repair.

Eight hundred and forty pounds of line conductor (.109 HTL 135) was burned and annealed beyond further use.

Eight butt-wrapped grounds which were installed at points where power contact protectors were located were burned off poles.

A slack span of No. 18 drop wire installed at the cable terminal was burned down.

A five-pair lightning arrestor installed at the junction of the open wire and cable was burned off the pole.

The cable junction terminal tail was burned open and pairs damaged for about eight inches.

Deviation From Practices

The cable was damaged in both directions from the junction pole. The cable conductors were burned open at a location about 60 feet from the junction pole. Four other locations between the junction pole and the central office had pairs burned open, short and grounded. Two loading coil installations were also damaged by having coils burned open, short or grounded, and had to be replaced. About 90 per cent of the fuses at station protectors on lines served from this cable were operated.

An analysis of this case by REA engineers indicated two major deviations from REA Protection Practices in the Construction of the Telephone Plant as follows:

A joint pole was not used at the crossing. If this had been done, it probably would have prevented any contact between the phase wire and the telephone plant, as the phase wire broke at the deadend pole and would probably have cleared the crossarm. The joint pole would have provided easy access to the neutral for grounding the power contact protectors.

Grounds in Question

All of the power contact protectors should have been grounded to the multi-

SAFETY THUMB TACKS

By John A. Bracken

Bits of safety reasoning, either pointed or flat, depending upon the way you look at them:

"*Safety*—must be practiced to be appreciated."

•

"Proof of practicing *Safety*—is avoiding accidents."

•

"What is there to lose—by practicing *Safety?*"

•

"As a *Safety* measure: good judgment consistently applied."

grounded neutral. Instead, they were grounded by means of butt-wrapped grounds which proved to be inadequate. A study of the fault current in the telephone plant and the amount of damage to the power contact protectors indicated that grounds provided were of at least 100 ohms resistance. This did not provide a short circuit path for the power system fault current and, therefore, did not clear the primary fuse properly.

The above noted deviations from the recommended protection practices on the part of the telephone company, together with the failure of the power system circuit breaker to operate properly, resulted in the relatively large damage occurring from this contact. Here, again, it was fortunate that there was no injury to the public or telephone company personnel. The potential for far more serious damage and injury existed to a high degree for a relatively long period of time.

Knowledge From Experience

We are firm in our belief that the knowledge gained in the three cases cited where power contacted telephone plant indicates that certain necessary precautions must be observed at all times in order to avoid trouble. The success of this accomplishment is dependent upon the cooperation by the services involved in planning, engineering, constructing and maintaining both power and telephone facilities. There are two basic considerations that must be observed in the safe operation of power and telephone circuits when installed on the same poles or on parallel lines involving numerous crossings:

(1) Adequate structural arrangements in regard to strength and separations to minimize the possibility of contacts occurring and to provide safe working conditions.

(2) Coordinate electrical protection of distribution and telephone facilities to minimize hazards to persons and to limit plant and property damage in the event of accidental contact.

Safety Code Provisions

The National Electrical Safety Code permits Grade C construction for joint-use poles and for power conductors only if the electrical protection schemes are adequately coordinated. Coordinated electrical protection is obtained where:

The power and telephone circuits are so constructed, operated, and maintained that the power circuits will be promptly de-energized both initially and following subsequent circuit breaker operation in the event of a contact with telephone plant.

The voltage and current impressed on the telephone plant, in the event of a contact, are not in excess of the safe operating limits of the telephone system protective devices.

Telephone cable protection on joint-use pole lines consists of bonding the cable sheath and strand at regular intervals to the multi-grounded neutral of the power system, if available. In joint use with non-multigrounded neutral power systems, the cable is bonded at intervals to water pipe or other good grounds, if available. In all cases, the cable sheath is also bonded to the telephone central office ground.

Power Contact Protectors

The general scheme of protecting open wire telephone circuits in joint use arrangements is to install power contact protectors at regular intervals along the line and station protectors at each subscriber's station.

A power contact protector consists of a unit containing three cylindrical carbon blocks having large current carrying capabilities. One of the three carbon blocks is connected to each line wire of a telephone circuit, and the third block is connected to ground. The spacings are such that the gap will break down at approximately 3,000 volts. In most instances, this protector is capable of carrying power system fault currents in the event of a contact with telephone circuits, for a time sufficient for the power circuit reclosers to operate, recycle, and permanently de-energize the line.

The ability of the power contact protector to insure prompt de-energization of the power circuit, in the event of a contact, is dependent on its ability to cause a large current flow through the carbon blocks to ground. This current flow, in turn, is primarily dependent on the magnitude of the ground resistance to which the ground carbon block of the protector is connected. For this reason, it is considered necessary to install power contact protectors on all telephone circuits at specified intervals in joint use lines, at crossings, and at structural conflicts if a cheap, low-resistance ground such as a power line multigrounded neutral is available.

When neither a multi-grounded neutral or a public water system ground is available, it is generally not possible to obtain a cheap ground of sufficiently low resistance (not greater than 15 ohms). In this event, contacts must be prevented if possible by building structurally stronger lines.

Station Protection

The principal purpose of subscriber's station protection is the prevention of injury to persons and property from electrical hazards. The most effective method of protection is to interconnect the grounds of all wiring and pipe systems at each location. This is necessary so that each conductor is maintained at a fixed potential with respect to ground, and any increase in ground potential due to an abnormal voltage or current in one system will result in a similar increase in the ground potential of the other interconnected systems. REA telephone installation specifications require this practice wherever practicable.

Presently available telephone subscriber station protectors generally give satisfactory performance when power faults having a magnitude of up to 300 amperes at 3,000 volts are impressed across the terminals. It is, therefore, necessary that power contact protectors be used in conjunction with station protectors on all lines exposed to power systems operating at voltages in excess of 3,000 volts to ground.

Summarizing Problem

Summarizing, it appears probable that trouble could have been prevented, or at least reduced, in Case No. 1, if power contact protectors had been installed on the telephone lines in addition to the 83-A protector at the cable terminal. It is also possible that low resistance grounds were not provided at all of the subscriber's station protectors. The amount of protection provided by any protector will have a direct relation to the resistance of the ground.

If, in this case, the protectors on the telephone line had been equipped with low resistance grounds the power circuit would probably have been de-energized on contact. Then, again, it is possible that the power circuit breakers were not operating properly. In this case, it is more than likely that both the power and telephone companies were at fault.

In Case No. 2, there is a probability that if B-type protection had been used the damage due to the power contact would have been reduced considerably. With this type of protection, all pairs terminated on the main frame are protected. If an A-type main frame is to be continued in service, carbon block protection should be provided on all working pairs and all non-working pairs should be strapped together and grounded.

Flameproof or slow burning plastic insulated jumper wire should be used, which will also reduce the fire hazard considerably. Furthermore, there should have been a coordinated effort on the part of the power company and the telephone company to make certain that the telephone system was in the clear prior to reactivating the power system. In addition, the circuit breakers on the

(Continued on page 104)

Chemical Brush Control and Your Trimming Dollar

By C. F. McLEAN*

WE CAN'T AFFORD to overlook chemical brush control as a useful tool in helping us carry-out an effective and economical right-of-way maintenance program.

The practice of controlling brush and other unwanted vegetation with chemicals is not new. Railroads, utilities and foresters have relied, in varying degrees, on chemical brush control for many years.

Brush control is an expensive, recurring problem directly connected with the responsibility of providing our customers the best possible telephone service at the lowest possible cost.

In each of our right-of-way maintenance programs there is a place for chemical brush control and a place for mechanical brush control procedures utilizing various methods and equipment.

For many years mechanical methods were the most common and practiced means of controlling brush. This method naturally required extensive manpower to operate the equipment and wield the saws, axes and brushhooks. Unfortunately it was also necessary to usually re-cut the brush within two to five years. Rising labor costs have made the exclusive use of this method of brush control practically prohibitive.

A re-evaluation of our right-of-way maintenance program revealed that chemical control of resprouting or regrowth in fresh cut areas would reduce costs. It also revealed that reduction in costs would be in proportion to the extent the chemical control of resprouting or regrowth increased the elapsed time between mechanically clearing brush in any specific area.

Up to this point much of our chemical brush control work had proceeded on somewhat of a trial and error basis. Control was attempted erratically. New chemicals, or old reliables in a different form with activity but no particular merit to us, caused confusion. Our specifications covering application techniques often didn't match our problem, and the results of our chemical brush control were frequently misinterpreted.

More than 10 years ago one manufacturer set out to establish chemical brush control as a more exact science. Involved in this endeavor were research and development men, technical service representatives and field sales representatives. They worked directly with men responsible for brush control for utilities, railroads and others. They were on hand when brush control projects were surveyed. They went along with crews making the applications and they returned to measure results.

Out of this accumulation of experience there came a firm concept of

*Mr. McLean is Production Engineer of Chenango & Unadilla Telephone Corp. of Norwich, N. Y.

The Author

C. F. McLean is a comparative youngster in the telephone business. He joined the Bell System upon his graduation from Syracuse University in 1930.

He started out in the supply department and after completing an extensive plant training program, which covered intensive on-the-job training in most every phase of the business, he was appointed to a managerial position in the supplies division. While in this division, he was directly responsible for the development of a system supplies control procedure.

He left the telephone business in 1949 to devote full time to personal business interests as president of Alden Enterprises, one of central New York's largest theatrical and promotional agencies and as president of a Radio Transmission Line Construction Co.

Upon his retirement from personal business activity, he returned to his native Chenango Valley and became associated with the Chenango & Unadilla Telephone Corp. of Norwich, N. Y.

Right-of-way cleared and stumps treated with 245-T and fuel oil on Aug. 18, 1959. This photo taken on Apr. 12, 1961.

brush control. *It was the concept of programming.*

Within the orderly framework of programming, chemical brush control can be carried out with a prescribed efficiency. Long-range plans can be made with certainty. Brush control can be accomplished with greater economy, with better use of manpower, and without endangering public relations.

The objective of a sound chemical program is to provide the most adequate brush control from year to year at the most economical cost per mile. To realize this objective there are many facets of the program that must be carefully evaluated. This evaluation will reveal that there is no single sure-fire, cure-all program that will solve all brush control problems.

First of all any sound brush control program must satisfy the needs of the problem within the limits of the budget. After having satisfied this important part of the program, the ever-present problem of getting more money for brush control will, in the light of good programming, produce more brush control for the money.

Other important and closely related facets of the program are the choice of the proper chemical and carrier, the right method of application, the time of application, and the accurate evaluation of results.

Choice of the proper carrier and chemical is dependent upon the type, species and size of growth that must be eliminated and/or controlled, on the time of year that application is made, and upon the method of application.

The method of application should be tailored to effect the most adequate control with the chemical and carrier selected. The method must also satisfy the requirement of maintaining good public relations and of observing civil regulations.

It is quite possible that the use of various chemicals and methods of application in the same area might result in a more adequate control and, at the same time, effect economies in the over-all program.

The time of application, closely related to the other facets of the program, if not closely controlled, would obviate the effectiveness of the entire program.

One of the most important procedures of the program and, in many cases, the one that receives the least consideration is the accurate evaluation of results. The importance of this point may be measured in terms of telling us if we are getting the most adequate control for the dollars spent.

Past experiences in various methods of brush control, and a careful evaluation of the factors involved, indicated that the method best suited to our particular problem was the initial clearing of brush and the coincident control of regrowth and resprouting by the application of chemicals.

CHEMICAL BRUSH CONTROL PROGRAM ANALYSIS

1959

Exchange	Total Line Mileage	Actual Miles Trimmed	Actual Trimming Cost	Average Cost Per Mile Total Line Mileage	% Miles Trimmed of Total Line Mileage
Norwich	218	114	$14,968.95	$68.66	52%
DeRuyter	65	22	2,848.88	43.83	34%
Cincinnatus	57	33	4,203.70	73.75	58%
Totals	340	169	$22,021.53		
Averages				$64.77	50%

Actual Trimming Cost

Includes labor, equipment rental and cost of chemicals.
Actual cost — $1,638 less than estimated.
Anticipated % reduction in costs 1962 — 48% (results evaluation).

Chart I

We have generally adopted the stump method of treating the stumps, stubble and root crowns with 245-T and fuel oil in a mixture of 96 gallons of fuel oil and four gallons of 245-T.

This method lends itself to our specifications covering brush control which, in part stipulates removal and disposition of all brush from the cleared area and the chemical treatment of all stumps, stubble and root crown within 72 hours of cutting.

The removal of the brush tends to provide maximum exposure of the stumps, stubble and root crowns which generally allows the operator to completely cover and saturate them with the chemical.

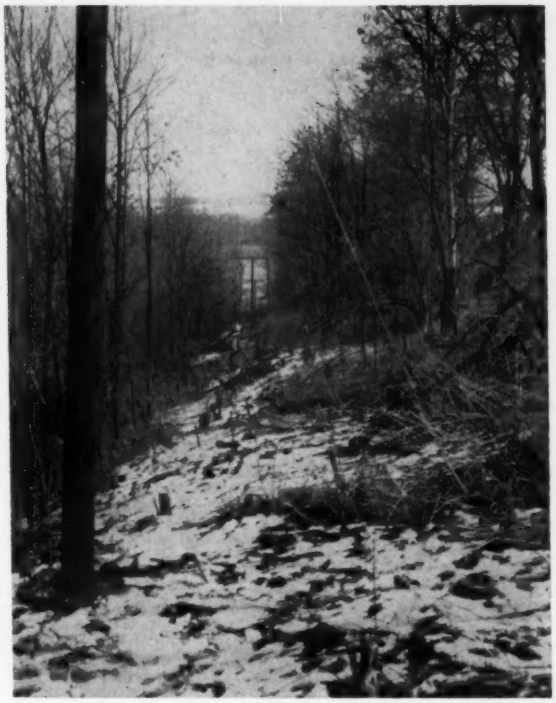
Other desirable factors relating to the stump method of brush control are timing, volume of chemical required, hazards involved and equipment required for application of the chemical.

The desirability of the timing factor is emphasized by the fact that treatment may be made any time it is possible to wet the stumps, stubble and root crowns thoroughly. This means that the limitations covering treatments controlled by foliage and growth may be extended to allow more brush control per year.

The desirability of the volume factor is measured in terms of controlling more acreage per gallon ranging from 20 to 40 gallons per acre depending upon the size of the stumps and the density of the brush. This means low cost chemical control per acre as compared to some other methods.

The hazards involved in this method of treatment are negligible because of the low pressure application of the chemical. As in any spray application, however, drift should be avoided and local regulations observed.

Knapsack or tank-type hand sprayers fitted with a grip-type quick shut-off can be used in this method of control. This obviates a heavy investment in spray equipment, thereby effecting further economies in the over-all program.



Another right-of-way cleared and stumps treated with 245-T plus fuel oil. No noticeable regrowth at time of this photo (Apr. 12, 1961), 19½ months after treatment.

Although we have generally adopted the stump method of brush control with 245-T and fuel oil, we are continuing our comparative experiments in the field with other chemicals such as the ammonium sulfamate types.

Each comparative experiment is carefully logged as to brush specie, weather, ground conditions and time of year. The experimental areas are photographed and labeled at the time of the initial treatment, again at the

TREE TRIMMING & BRUSH CONTROL SCHEDULE AND COST ANALYSIS

Exchange	Total Line Mileage	1959 Est'd Trim Mileage	1959 Est'd Trim Cost	1960 Actual Trim Mileage	1960 Actual Trim Cost	1961	1962 Est'd Trim Mileage	1962 Est'd Trim Cost	1962 Actual Trim Mileage	1962 Actual Trim Cost	1963	1964
Norwich	218	109	$15,260.00	114	$14,968.95		46	$ 7,084.00				
DeRuyter	65	32	4,480.00	22	2,848.88	NONE	9	1,386.00			NONE	NONE
Cincinnatus	57	28	3,920.00	33	4,203.70		13	2,002.00				
Totals	340	169	$23,660.00	169	$22,021.53		68	$10,472.00				

Estimated trim mileage based on 50% total line mileage.

Estimated trim cost based on $104 mile.

Estimated trim mileage based on 40% prior actual trim mileage.

Estimated trim cost based on $154 mile.

Increase of mileage trim cost based on anticipated 5% annual labor and material price increase.
Anticipated right-of-way maintenance cost savings—1962, $11,549.
Anticipated percentage of reduction in costs of right-of-way maintenance—1962, 48%.
Continued savings anticipated on basis of projecting future actual trim mileage at 40% of prior mileage.

Chart II

height of the next growing season, and finally one year from the date of the initial treatment. The photographs together with data obtained from inspections of the experimental areas enable us to evaluate comparative results from the chemicals used.

This evaluation substantiates the fact that there is no one method or chemical that will solve all brush control problems.

The scope of any brush control program might best be visualized by reviewing the scope of the over-all operation of the company concerned.

Our company, at the present time, operates 34 exchanges, 29 of which, serving 86 per cent of our more than 30,000 stations, are dial operated.

We cover an operating territory in central New York State of approximately 2,000 square miles and are the fourth largest Independent telephone company in New York State and the 47th largest in the United States.

Numerous species of brush and types of terrain, which vary from swamps and rolling hills to beautiful meadows, may be found in our operating territory. The rainfall and temperature factors contribute to a luxuriant growth of brush and vegetation. The greater percentage of our right-of-way is in the rural areas. In view of this, and the fact that most of our exchanges are dial operated, it is obvious that we have an ever-present, king-sized problem of brush control.

Our first step in setting up a brush control program was to make a detailed survey of the lines in three representative exchanges in our operating territory to determine actual mileage to be trimmed and/or cleared.

This information, together with data from our engineering records indicating total line mileage in each exchange, enabled us to develop a percentage figure that would represent an estimate of the total mileage to be trimmed and/or cleared in each of our exchanges. Our brush control line survey showed the following:

Exchange	Total Line Mileage	Total Mileage Actual Brush Control	% of Total Line Mileage Controlled
1	65	22	34%
2	57	33	58%
3	218	114	52%
Totals	340	169	50%

Our next step was the development of an outline covering our proposed over-all brush control objectives which would ultimately serve as an operating specification.

This outline covered the basic objectives of a general program and the specifications evolved were patterned after those generally in effect in other utilities.

We then contacted various tree expert contractors, who armed with our Brush Control Line Survey, Brush Control Specifications and line maps, made their own survey of the three exchanges for the purpose of developing costs and preparation of bids to cover implementation of our proposed program.

An evaluation of the bids presented by the various contractors indicated that the most desirable method of costing brush control was that of computing mileage to be trimmed, on a basis of 20 sections per mile of actual trimming and billed at a cost of "X" dollars per mile or each 20 sections or portion thereof (See Chart I).

From the facts and cost figures accumulated from these surveys we developed a Brush Control Schedule and Cost Analysis on the basis of a seven-year projection (See Chart II).

This schedule projected the completion of converting one-third of our right-of-way, to the point of subsequent spot control, each year.

Revision 3/61

CHENANGO & UNADILLA TEL. CORP.
Norwich, N. Y.

Sheet No.____ of____

RECORD OF TRIM AND SPRAY BRUSH CONTROL

Exchange

Contractor

Foreman

Road - Street	Line No.	Record of Trimming & Chemical Treatment: Poles From	Poles To	No. of Sections	Type of Chemical	Date	Remarks
	Total Sections						

C&U Inspector

Sub-standard plant conditions and drop wires requiring trimming shall be recorded on reverse side.

Chart III

The retreatment of rights-of-way in the fourth, fifth and six years of the exchanges treated the first, second and third year, respectively, was projected on the basis of 40 per cent of the initial mileage of the prior treatment.

Our next and probably most important step in setting up our program was convincing top management that it would effect real savings in right-of-way maintenance costs.

This was not easy. An effective brush control program, due to its scope, must have long-range objectives. As a result, nothing less than long-range benefits can be expected. The initial costs of the program preclude the possibilities of any immediate savings.

Token savings will become apparent, however, after completion of the first leg of the program. Real savings will become apparent and continue to increase as the program progresses.

The ultimate savings, through continuation of the program, may be measured in terms of a possible 75 per cent

(Continued on page 98)

How Subscribers Look at Trouble — Section 4

By L. N. MARTIN

ANOTHER ITEM that can cause very unfavorable subscriber reaction is *repeated trouble*. The subscriber's viewpoint is easy to understand. A certain subscriber may tolerate without complaint four cases of trouble well scattered over a year's time. The same subscriber will complain of four cases of trouble in January. He may reason that at that rate he will have 48 or more cases during the year, and we can find no serious fault with his reasoning. Four cases in one week would be still worse. Even though he has no more trouble for two years, the bitter taste of that experience may linger for a long time.

The telephone company also should be much concerned about repeated trouble. Yes, some repeated trouble is just a coincidence. However it is dangerous thinking to just dismiss the whole matter as coincidence and forget about it. We believe that each case of repeated trouble should be investigated with the idea that coincidence is the least likely explanation.

What Is Repeated Trouble?

What is repeated trouble? Each company may, of course, have its own definition. The basic idea is that there is too short an interval between cases, even though the total trouble over a longer period (such as a year) is satisfactory. Several companies define a repeated case as: "Any subscriber report that is received within 30 days or less after the preceding report by that subscriber, whether or not the present trouble has any relationship to the earlier case." (Note: PBX and other multi-station installations come under some special ruling.)

Some telephone men will say: "Why should a case be called repeated if it is an entirely different kind of trouble, in a different type of plant, and far removed from the previous case as to location?"

Subscriber's View Paramount

We are discussing the subscriber's viewpoint and we are considering only subscriber reports. The subscriber may not distinguish between a case of cable trouble and a case of central office trouble. All he knows is that his telephone was out of service twice within a few days. Suppose that he has three cases within 10 days and it is carefully explained to him that these cases were in different parts of the plant and were in no way related. He is liable to say: "It looks like your plant is falling apart all over."

PART 79. The preceding article in this series appeared in the Feb. 25 issue.

Is the company sure that the cases, though scattered, do not have a common cause? Consider this example: First case, open fuse in the station protector; second case, open winding in the central office line relay; third case, open cable pair. Is there a possible common cause?

Clerical Routine Needed

The first step in reducing repeated trouble is to set up a clerical routine which will definitely call attention to these occurrences. At least three companies that we know of use the following method: When the repair clerk receives a subscriber report she examines the line card (if possible, while the subscriber is still on the line), and if the preceding report was received within 30 days or less she enters the new report in red. This secures special attention to the case by all who handle the card. When the case is cleared, the card is referred to the ranking plant supervisor at that exchange, who may order additional action. When he is satisfied that sufficient action has been taken, he initials the report and returns the card to the file.

Provision is also made for indicating by a check mark on the log that the case was "repeated" and these marks are tallied at the end of the day and summarized by months or by quarters. These cases may be measured by "Repeated cases per 100 stations" or "Per cent of total subscriber reports." The company must at all times know its standing in this matter, otherwise it will not know whether this situation is getting better or worse.

Examples Cited

The causes of repeated trouble are so numerous and so varied that we will not attempt to list all of them. The best we can do is to cite a few typical examples, all of which are taken from our own experience.

Many repeated cases follow a report that was closed as: "Found OK"; "Test OK," or "Came Clear." This plainly says: "We did not find the trouble so it came back." Sometimes this is due to a misunderstanding of the subscriber's report. We remember an almost ridiculous case of this kind.

The subscriber reported "Can't Hear," or at least that is the way the repair clerk understood her. The repairman went to the telephone and had no trouble talking to the testman, even when a 30 db pad was cut into the circuit. Verdict: "Found OK." Now it seems that the repairman did not talk to the subscriber. Many subscribers will just point out the location of the telephone and go about their work. The repairman may hesitate to disturb the subscriber when he leaves, or he may not be able to locate her.

Mistakes by Company

The report was repeated and the same thing happened. When the third report (second repeated case) came in, somebody "woke up." The repairman talked to the subscriber who said: "Oh, I hear people talking all right, I just can't hear the bell ring."

It is easy to point out several serious mistakes on the part of the telephone company. When a repairman visits a station he should test all functions of the telephone. He should certainly secure a test ring from the office. When

the trouble reported by the subscriber cannot be reproduced by the repairman, he should make every effort to interview the subscriber even if a return trip is necessary.

While the above story may seem somewhat silly, it actually happened and points out a frequent cause of repeated trouble. The subscriber may not be adept at describing his trouble in a way that will be clear to the company. Tactful questioning by the repair clerk, the testman, or the repairman will help, especially if the trouble occurs at irregular intervals. Such questions as: How often does this happen; what time of day was it; was the weather hot or cold, wet or dry; who were you talking to; did he call you or did you call him, may bring out some pertinent information.

Other Companies Involved

For example, there was the case of the elderly lady who made repeated reports of "Can't hear and noisy." The repairman finally had a long talk with her, which disclosed that her major reason for having a telephone was to talk to her daughter who lived in a nearby village. Now the exchange at that village was operated by a mutual company which did not even have a repairman. Each subscriber-owner maintained his own telephone and grounded line as best he could. The service was very bad. The repairman questioned her further. She sometimes called the corner grocery store or her doctor. She said she had never had trouble on those connections. Little could be done about her daughter's telephone service, but when the subscriber realized that all her trouble was at another company's exchange, she made no more reports. This should have been accomplished on the first visit by the repairman.

Trouble may be caused by the wrong operation of the telephone by the subscriber. In fact many companies have a classification of trouble called: "Wrong operation of equipment by the subscriber." One example is the habit of dialing without first putting the receiver to the ear. The subscriber may get by with this most of the time, but every once in a while he will dial ahead of the dial tone and get a wrong number or get no one. He may think that the telephone is at fault and this leads to repeated reports. This situation should be discovered by the repairman on his first visit and the reason for the trouble should be explained to the subscriber.

Return Again and Again

On first thought, it may be difficult to understand how such a definite case of trouble as an "open" can disappear and never return or disappear and return again and again, but such cases are not uncommon. If a line tests open during working hours, but is OK when the repairman goes on the case, the reason may be that some telephone workman had the line open making a cable throw or a pair change. The line may have been open for only a few minutes, but the subscriber happened to want to use his telephone at just that time. Such work is always a matter of record. If the record shows that the line was open at about the time that the subscriber experienced the trouble, the case may be classified as "Trouble caused by company workman" and the company can be reasonably certain that it is not the beginning of a chronic case.

On the other hand, there are opens which come and go. The tubular fuses that were once used in distribution terminals and station protectors were often the cause. However the present protection engineering practices do not recommend this use of fuses and any company will do well to eliminate them.

Tubular Fuses Still in Use

This type of fuse consists of a tube made of some kind of fiber through which runs a ribbon or wire of fusable metal. The fuse wire is soldered at each end to a metal terminal. Warping of the fiber tube, due to the absorption of moisture, would break the soldered connection at one end of the fuse wire. In many cases, the wire would still rest against the terminal making a connection, but this connection would open and close as a change in humidity would cause the fiber tube to change its shape. (Note: Later fuses have tubes of a plastic material which does not warp, but many of the older type are still in service.)

There are other situations in which a change in humidity or temperature can make and break a contact. Even an open cable pair may temporarily close when the heat of the day expands the wire and pushes the ends together. At night it may open again.

Loose Connections

Another type of disappearing open is caused by a loose or corroded connection. The connection tests open most of the time, but when ringing on the line the higher voltage of the ringing machine arcs through the bad connection and closes the open by bridging it with a tiny particle of fused metal. The line may be OK for several hours; then a slight movement or jar breaks the delicate connection and the line is again open. We have seen many cases of this kind. The subscriber's story is: "Most of the time I can't get dial tone, but when somebody calls me I can talk all right and after that I have no trouble for an hour or so. Then it is dead again."

These disappearing cases can cause a long series of repeated reports. The remedy is to *find them the first time.* Every "Found OK" is a challenge. Cases where a subscriber makes false reports just to annoy the company are extremely rare. Therefore, when a subscriber reports trouble the company should feel certain that (1) there is trouble, or (2) there was trouble, or (3) the subscriber honestly thinks that he has trouble. Even item (3) can be found and cleared.

Don't Follow "Hunches"

Clearing trouble by guesswork or following a "hunch" can cause repeated trouble. For example: On a report of "Can't Hear" the repairman can find no trouble, but he has a hunch that the receiver unit is going bad. He replaces it. The case is closed on the record as "Defective receiver unit." A repeated report is received the next day. The repairman guessed wrong.

Sometimes, however, the only way to find a puzzling case is by a process of elimination. Thus, if cable pair trouble is suspected (but not proved), the pair may be changed. If the trouble is not repeated, the repairman is lucky. If the report is repeated, he has the satisfaction of knowing that it is not in the cable. However, in this example, the

(Continued on page 96)

Do Not Resist Progress

The *Wall Street Journal* puts the matter this way:

"It will be a nation with low sights indeed that chooses to ignore the irrefutable evidence of history: That the result of labor-saving devices has always been more, not fewer, opportunities for labor."

The problem is how to increase our productive efficiency and to improve our ability to compete with foreign producers with a minimum of dislocations to labor.

Students are convinced that can be accomplished through labor-management cooperation in training displaced workers for other jobs and in assisting them in other ways.

And certainly, if history teaches anything, it teaches that no group has ever gained in the long run by opposing progress.—*Industrial News Review.*

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F50

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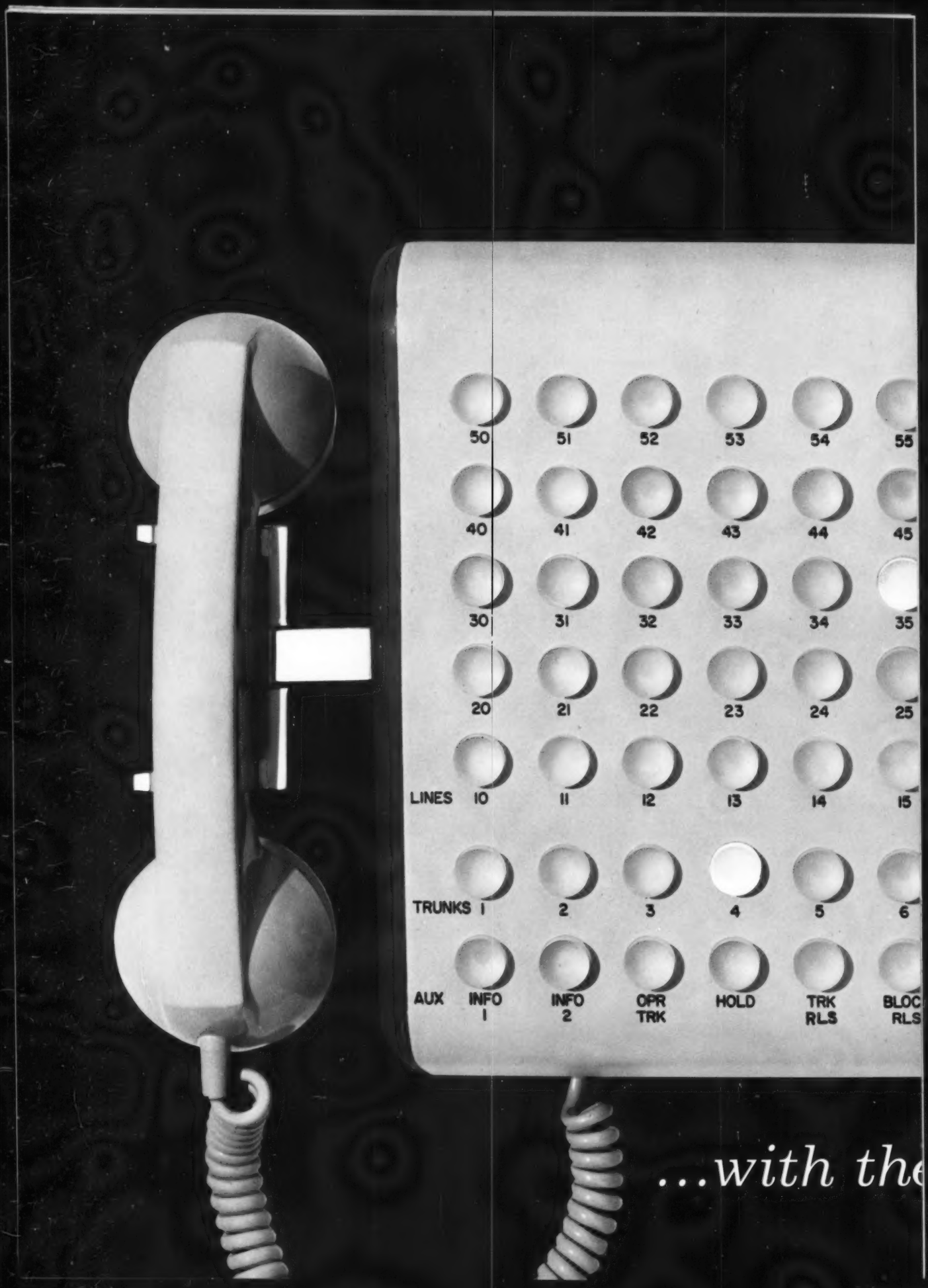
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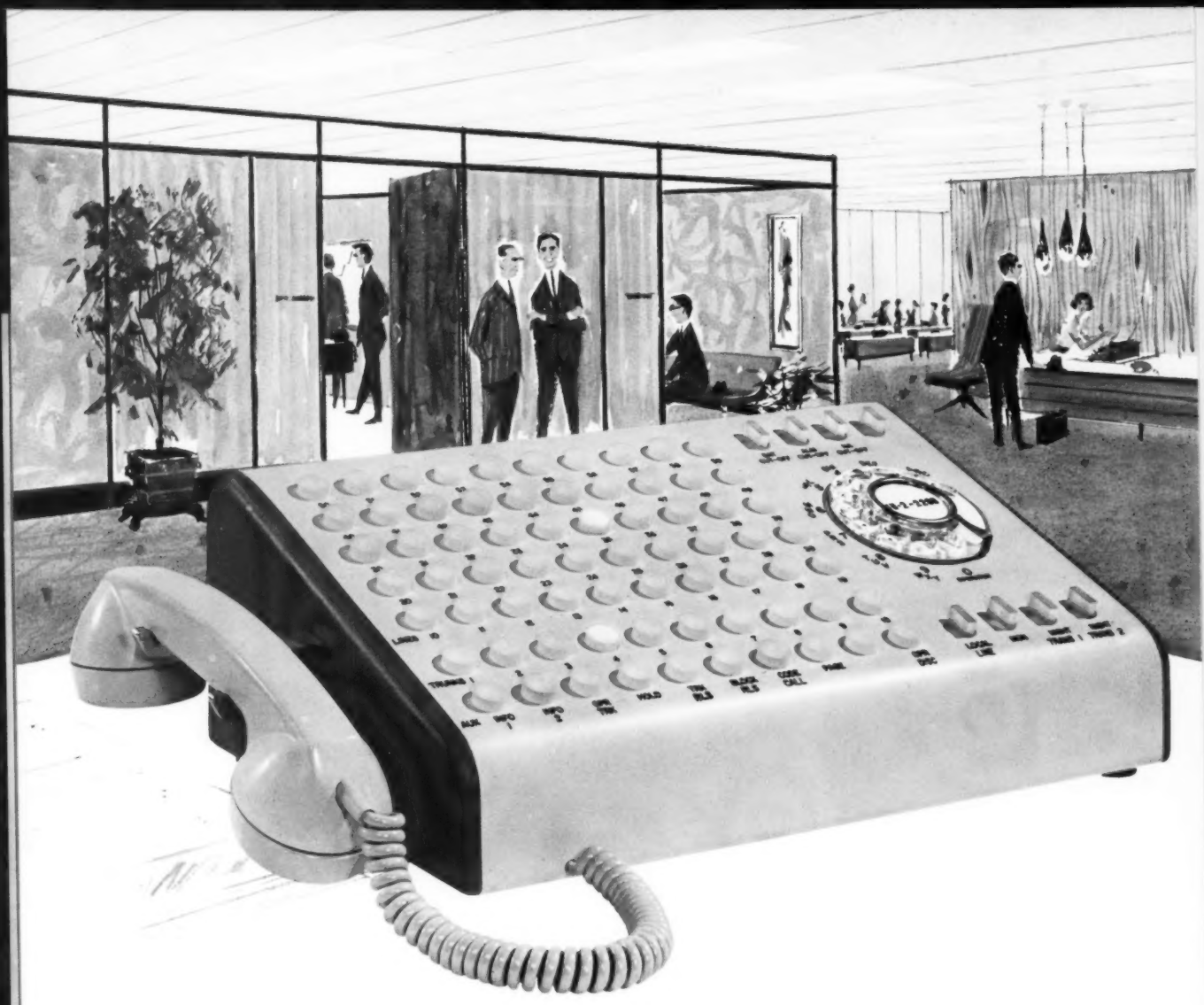

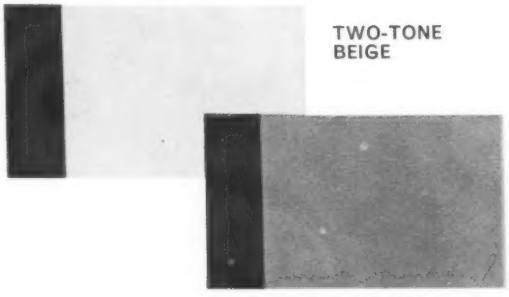

TWO-TONE
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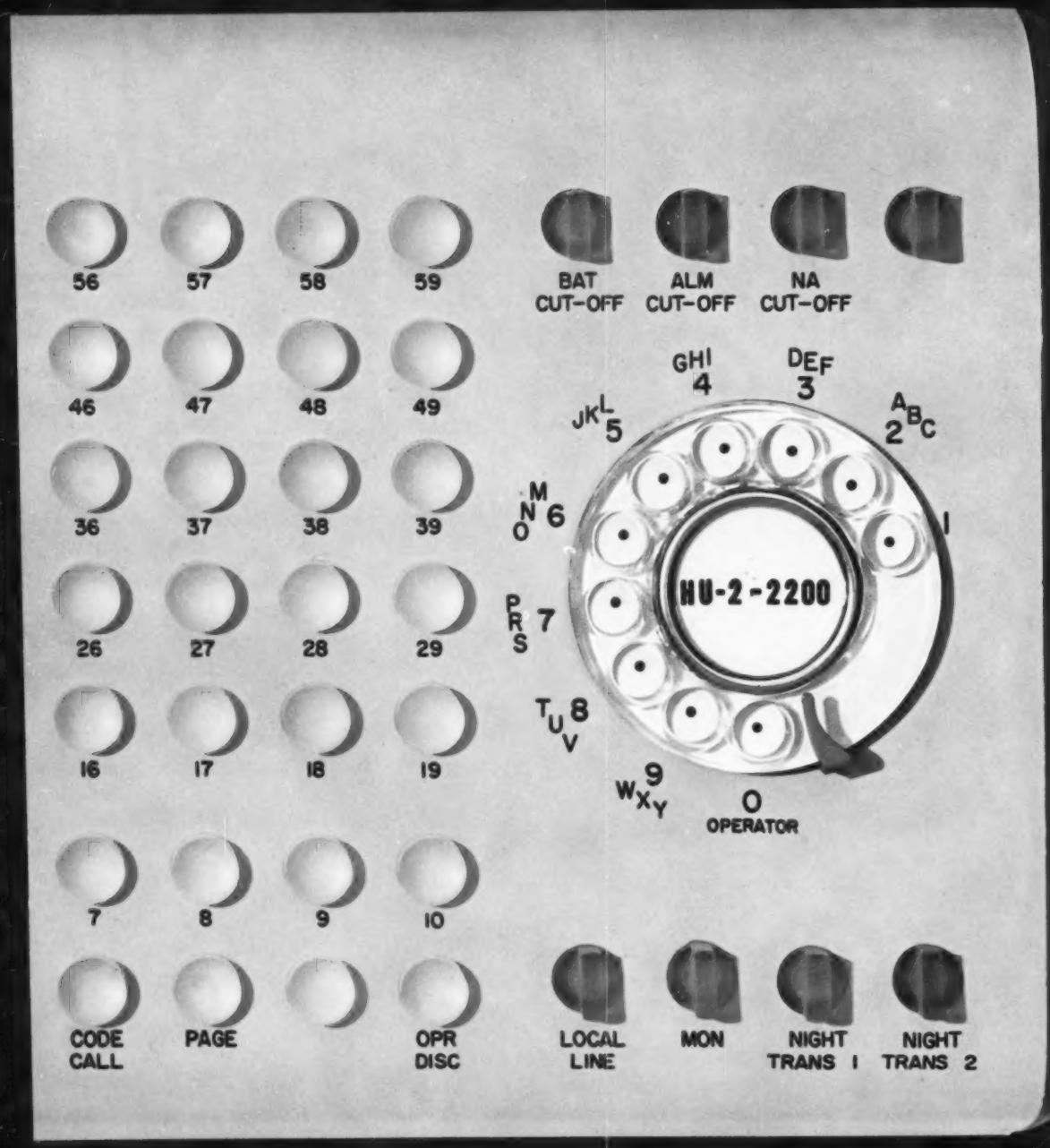
F50

"Touch-Lite" Turret

SPECIFICATIONS

1. Two-tone metal cabinet.
2. Compact size 9″ x 15″ x (5″ high sloping to 2½″)
3. Contoured "Touch-Lite" translucent keys.
4. "Twist-Lite" auxiliary keys.
5. Call transfer . . . single touch operation.
6. Lamps replaceable from face side.
7. Modular key strip construction.
8. Completely wired, including 85-pair cable.
9. Cable entrance either side.
10. Dial mounted "right" side.
11. Provision for operator's headset.
12. Standard 1500 Telephone handset.
13. Soft-pull retractile cord.
14. Non-skid rubber feet.



exclusive "Touch-Lite" Turret

AND 32 FEATURES YOUR CUSTOMERS WANT MOST

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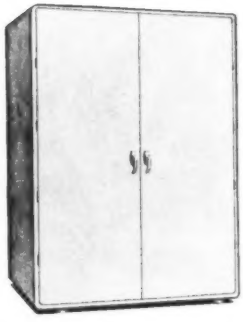
available from stock...ORDER NOW

The new Stromberg-Carlson F-50 XY® PBX—features the exclusive "Touch-Lite" Turret. Transfer and supervision of calls are accomplished by merely touching translucent keys which illuminate. "Touch-Lite" Turret is a two-tone metal cabinet (9″ x 15″ x 5″), engineered, styled and equipped to meet the demands of modern business communication. Capacity is 50 lines, 10 trunks, 6 links. It has the 20 most desirable features a PBX can have—*plus a dozen more.* The F-50 with "Touch-Lite" Turret adds up to the greatest PBX value today.

The dial is on the right-hand side for operator ease and convenience. The turret is delivered fully equipped, completely wired . . . with cable attached.

The equipment unit of the standard F-50 system is a trim, compact, sound-proofed office-type cabinet. It's mobile—rolls easily to any convenient spot. Power supply is self-contained.

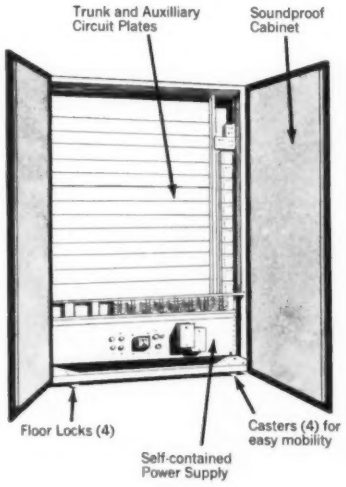
The complete story is in the hands of your Stromberg-Carlson representative. Call him now for technical data, prices, ordering information and selling aids. In Atlanta, call: 875-7467; Chicago: STate 2-4235; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200; San Francisco: OXford 7-3630.

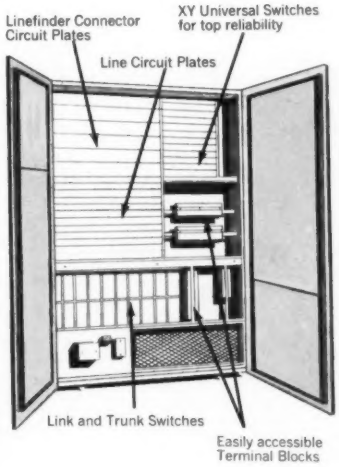


F50

switching equipment cabinet: XY reliability

All the necessary switching and power equipment for the F-50 system are contained in this trim, compact, mobile cabinet. Attractively styled in modern office gray, the cabinet can be placed in any convenient location. Takes very little floor space. Dimensions: 6′4″ high; 4′1″ wide; 2′ deep.




Linefinder Connector Circuit Plates
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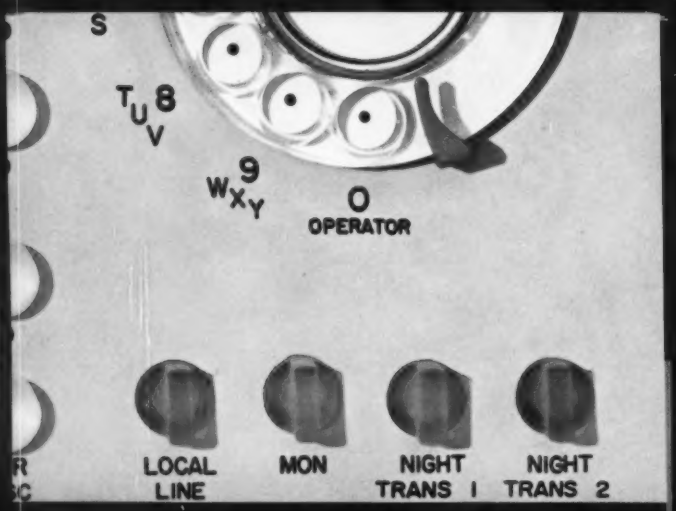
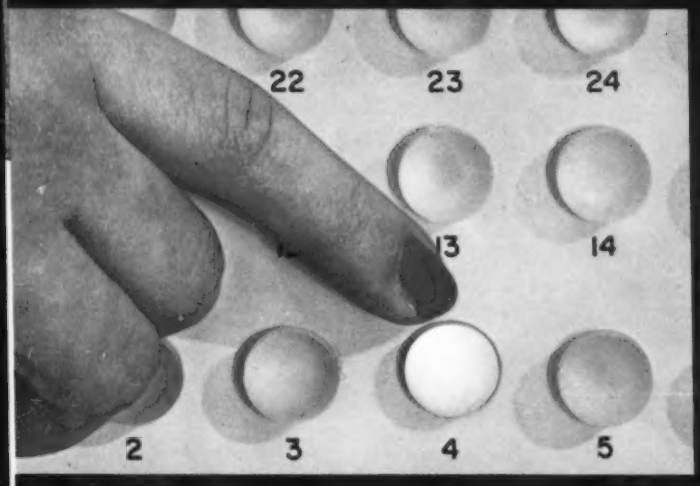
Easily accessible Terminal Blocks

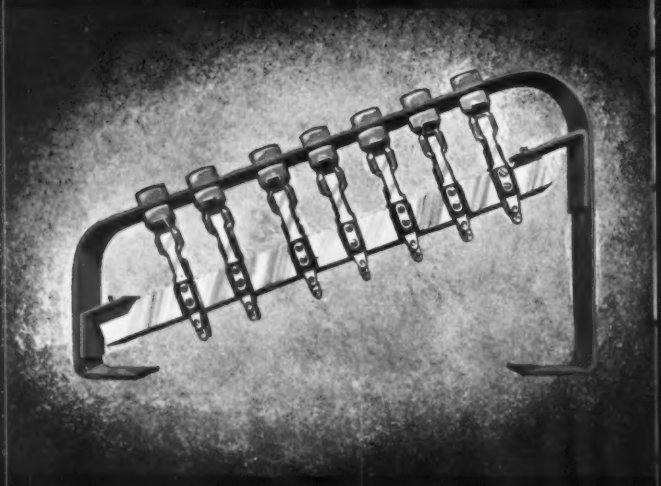
Low profile turret . . . cable can enter from either side . . . provision for operator's headset if desired.



Dial located on right side of turret for greatest ease . . . twist keys also illuminated type . . . extended dial number plate.



"Touch-Lite" Turret features single-touch operation throughout . . . keys light up at a feather-light touch.



Modular design of mounting keys and lamps simplifies maintenance . . . lamps can be removed from face side of cabinet.

features designed to serve the most exacting customers:

1. Busy Line Indication
2. Camp-on Busy
3. Attendant's Busy Over-ride
4. Consultation and Call Transfer
5. Night Transfer
6. Auxiliary Over-flow Link
7. Restricted Service
8. Executive Right-of-way
9. Optional Trunk Block Release
10. Power Failure Cut-thru
11. Instrument Push-button Control
12. Code Call
13. Conference
14. Paging
15. Station Answer of Trunk Calls
16. Multiple Trunk Groups
17. Tie Lines
18. Toll Restrictor (optional)
19. Release of Links on Trunk Calls
20. Trunk Splitting

. . . and here's the Stromberg-Carlson bonus of 12 more PLUS features!

1. "Touch-Lite" Turret
2. 1200 Ohms Subscriber Line Loop
3. All Equipment in one Cabinet
4. Full Rotation of Links and Trunks
5. Compact Cabinet (6′4″ x 4′1″ x 2′) only 8¼ square feet of floor space
6. Sound-Proof Cabinet
7. Mobile Cabinet has Locking Casters
8. Single-Touch Incoming Call Extension
9. Peg Count and ATB Meters
10. Standard Circuit Drawings
11. Standard "0" Level Information Trunks
12. Controlled Executive Right-of-way

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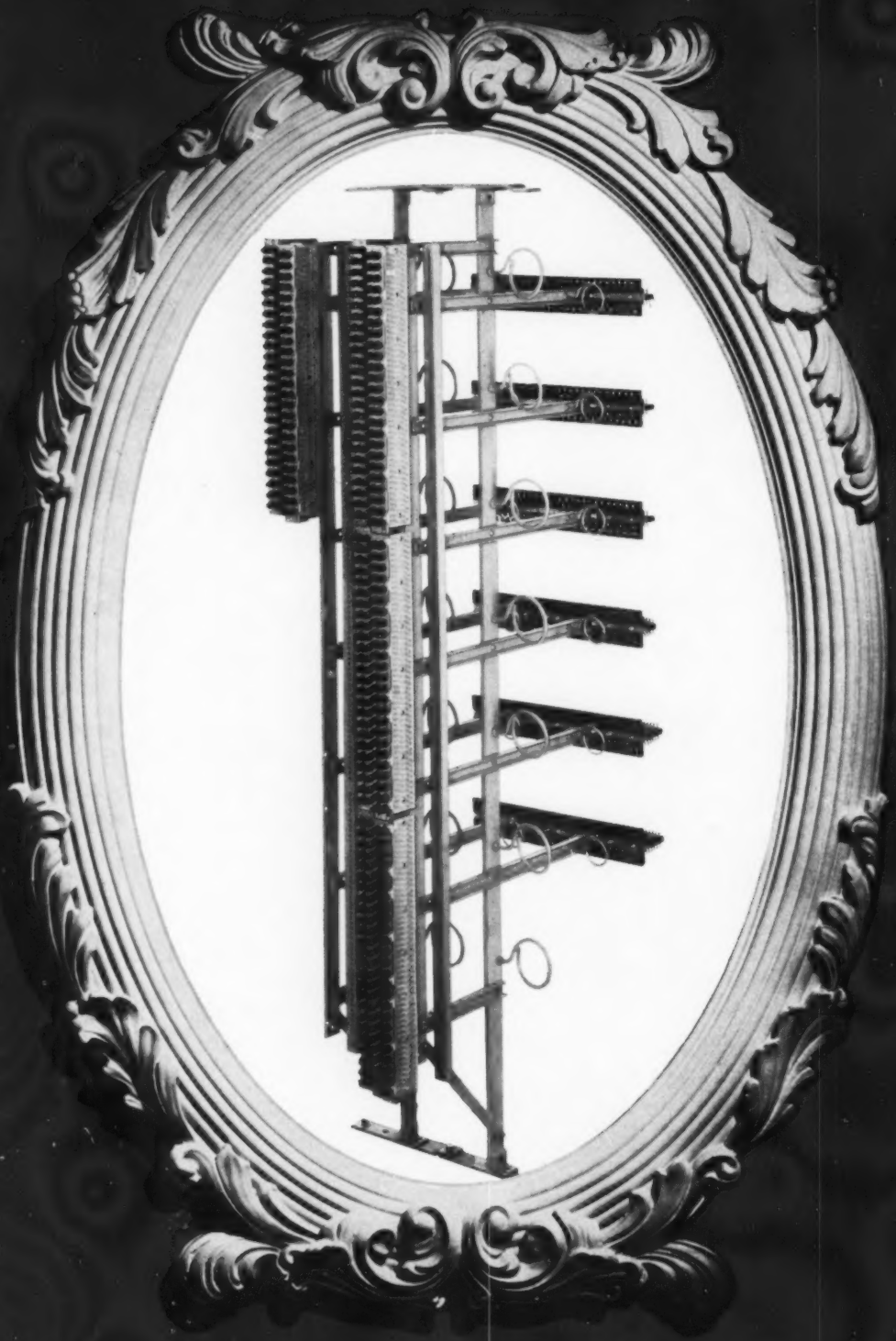
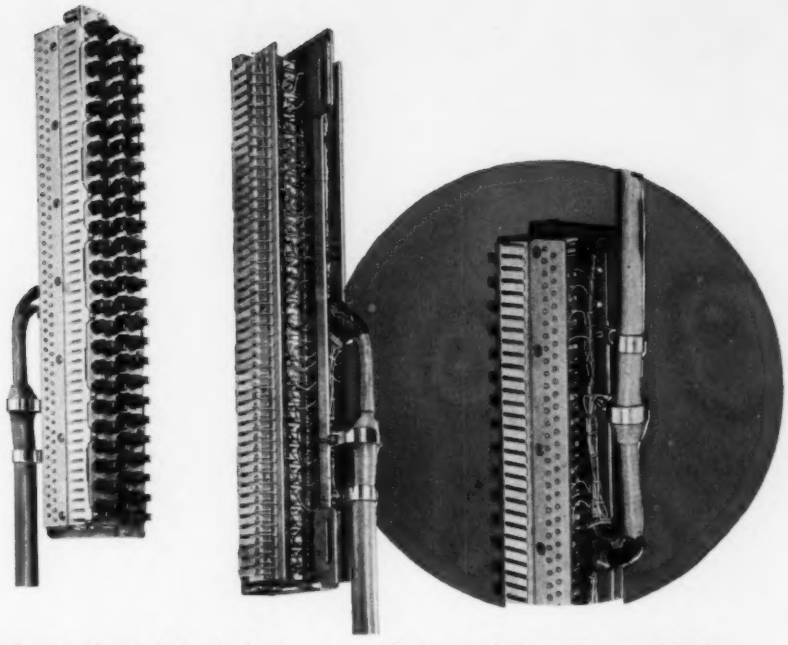


A *Reliable* image of improved main frames

The R300 Connector has a cast resin body, metal faceplate and twistlock inserted protector units. Circuits may be opened without removing the protector units.

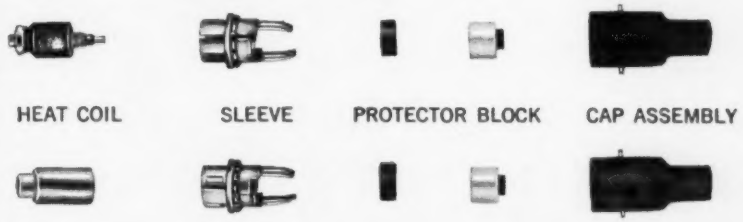


Stub cable is wire wrapped to projecting terminals at the back of the connector and is secured to an aluminum reinforced bar. All R300 Connectors are supplied with mounting brackets suitable for attaching to Main Frame protector bars.

Stub cable is 22 or 24 gauge PVC insulated, available in 101 or 51 pairs it is light, flexible and easy to handle.

Protector elements and contacts are completely enclosed in a dust-free high grade plastic assembly.

Catalog No. 3004 protector unit has a standard central office type heat coil and a .004 carbon-to-carbon air gap protector.



Catalog No. 3000 protector unit has a metallic dummy heat coil for use where heat coil protection is not required.

Reliable Type R300 Connectors and Main Frames are designed for installation in new or existing central office main frame rooms as well as P.B.X., P.A.B.X. and sub-exchanges. Connectors may be ordered in 50 or 100 pair banks with or without cable stub.

Light and compact, the 100 pair connector can be installed by one man in just a few minutes. Unpacking the R300 Connector is also a one-man operation; it is easily removed from a light, strong corrugated carton without the use of tools.

Write for detailed information in Reliable's Product Data Sheet No. 32.

Reliable

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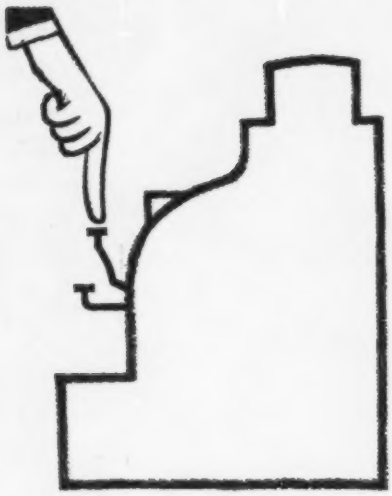


Sales Tips For Installer—Repairmen

By Ben Smith*

IN THE COURSE of traveling around and visiting exchanges of our company and from reading various sales reports, I was able to pick up some ideas on selling that Independent companies might put to good use. Here are a few I have encountered:

Slogan. "Continued showing and telling will do the best job in selling."

Change to color. One morning an installer found his assignment for the day included an order to change a black desk set to a green wall set.

After completing his second job, he called the office and was told, "Cancel that order to put in the green telephone. The customer has decided she doesn't want it."

"Okay," replied the installer. But then he began wondering what reasons the customer had for canceling the order, and he thought to himself, "Guess the only way to know is to go and find out for myself. It's just around the corner."

When the lady came to the door, he said, "I'm Russ Luther of the telephone company."

But she started out, "Oh, I called and cancelled the order changing my telephone."

The installer answered, "How about just seeing what the telephone looks like in the room?"

"All right," said the lady, "I'd like to see, myself."

Well, the installer had the green telephone with him, and he went into the room, held it against the wall, and said, "It certainly adds a new touch to the room. This is just what you want."

And you know, the customer replied, "Yes, I think I will take it after all."

The installer later thought *"They never know what they want until they see it."*

New Prospect. Every day we drive into filling stations, and very often we see the filling station man running from his pumps to his little office to answer his telephone.

One day, an installer got an idea. He thought to himself, "Why don't I put a telephone in a mine set on the gas pump island of a service station?"

He approached the owner of his neighborhood station, and suggested he could save the fellow steps, time and accidents.

Here was another sale for an installer. He installed an extension of the inside paystation in a mine set on the island between the pumps.

How many filling stations do you know where you could install an extension telephone on the gas island?

Color Helps Safety. A repairman found a good way to make some color sales. He was in a plant that was very conscious of safety.

They had safety slogans and banners. Different kinds of equipment were painted different colors for safety reasons.

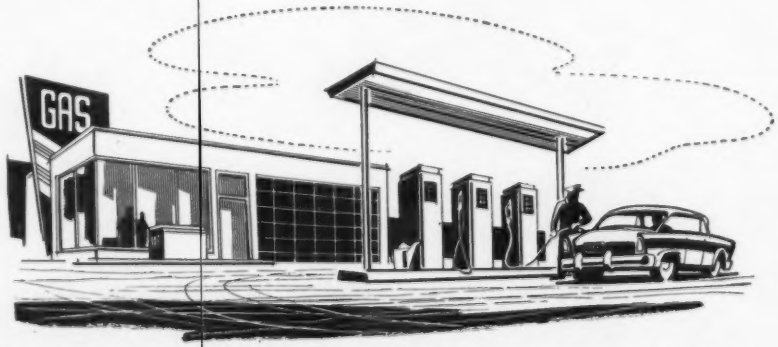
And, all the repairman did was suggest that all their telephones be red, so that you could find them easily. In case of an accident, they would spot the red telephones more easily. That repairman sold color telephones—to promote safety.

Mother-in-law helps. What a nice gift it would be if a mother-in-law, rather than living with the young couple, could give the newly married couple a telephone in color, so that the mother could call her daughter and her daughter could call her.

Ups and downs. A repairman started looking for opportunities to suggest telephones in color in elevators, particularly freight elevators. He tells the operators it saves time and saves steps and is necessary in case the elevator should stop between floors.

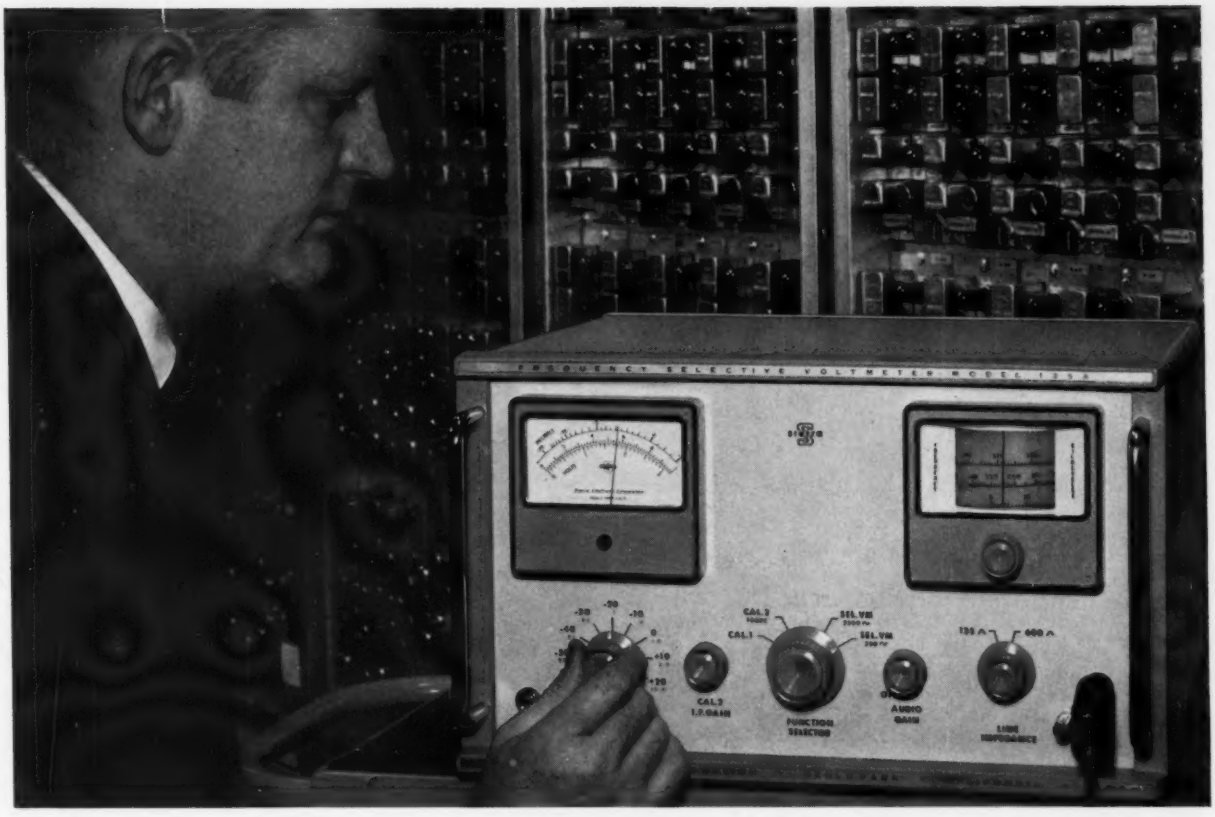
Now many night watchmen have

(Continued on page 102)



How about saving the service station man steps by installing a telephone in a mine set on the gas pump island?

*Mr. Smith is general merchandising manager for Southwestern Bell Telephone Co.



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Service and Selling

Share Texas Spotlight

By Dianne P. Drucker

ONE OF THE qualities that has made the telephone industry a great industry is the fact that it offers its subscribers good service, Winnie B. Burnett, chairman of the Traffic Committee of the Texas Telephone Association stressed at the association's meeting on Mar. 12, 13 and 14 in Houston.

The convention was presided over by Marion A. Clay, general manager of the Lufkin Telephone Exchange.

Mrs. Burnett, traveling chief operator of the Southwestern States Telephone Co., Brownwood, moderated and introduced a panel whose talks made up the branches of a "Traffic Tree."

Good service depends heavily on the quality of a company's traffic department staff. Therefore, a "certain skill" in interviewing personnel is important, Mrs. Burnett said in introducing Frank Pyle, traffic supervisor for Southwestern Bell Telephone Co., Houston, who spoke on "Conversational Skills in Interviewing."

Mr. Pyle listed the most common types of business interviews as follows: employment, progress, grievance, consultation, disciplinary, termination and informal.

Using the consultation interview as an example, he explained some techniques which can help the interviewer. The supervisor doing the interviewing should use understanding-listening, which Mr. Pyle defined, as follows:

Accept all statements without agreement, disagreement, approval, or disapproval.

Summarize from time to time to be sure you understand—serve as a mirror for the employe.

Help the individual to clarify his thinking by phrasing and rephrasing—but don't interpret.

Reflect the feelings expressed, both by individual responses and by summary statements.

Restrain your impulse to lecture, moralize or cite your own experiences.

Don't argue, interrupt, or allow your feelings to be obviously hurt.

Use very general questions to guide discussion away from areas fully covered and toward areas the individual seems hesitant to talk about.

People, Mr. Pyle stated, can be deterred from giving opinions and information just by the way questions are asked. He said that questions beginning with "is, do, has, can, will and shall" are "shutter-uppers." They seem to require a flat "yes," "no," or "maybe" for an answer.

"Mouthopener" questions, he felt, usually start with "what, when, how, who, where, which."

As for the word "why," Mr. Pyle emphasized that a question started with "why" puts the interviewee on his guard and is "likely to lose even more ground . . . than if we'd used a 'shutter-upper.'"

The pitch, or tone, of the interviewee's voice is also important. It can often reveal, Pyle pointed out, what 1,000 words will not.

To catch these inflections, the interviewer must give the employe full attention.

Mr. Pyle summarized the five main steps in conducting an interview as follows:

"First—put the interviewee at ease.

"Second—instill confidence in the person being interviewed—take her off the spot.

"Thirdly, in order to get information you may have to give some information. But never forget your purpose is to *get* information.

"Fourthly—cause the interviewee . . . to understand his problem or point of view from a slightly different angle than he did before.

"Lastly, in all interviews we should end up motivating the individual to carry out some type of action at least somewhat desirable from the interviewer's standpoint."

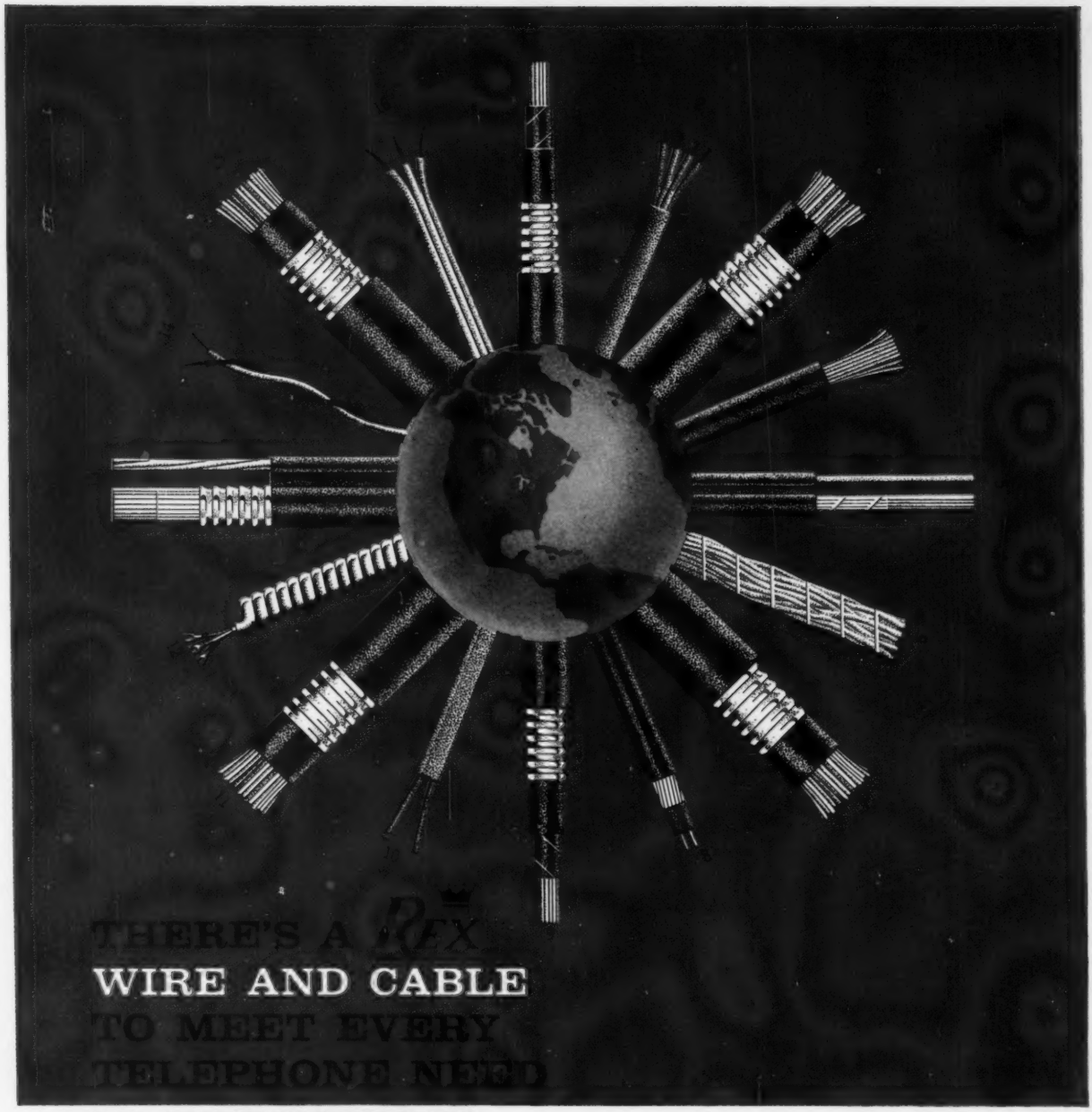
Good service also depends on how well traffic personnel are trained, and Mrs. Burnett introduced Mrs. Elizabeth Schnautz, chief operator of the San Marcos Telephone Co., whose topic was "A Progressive and Productive Operator's Training Program."

All operating personnel, Mrs. Schnautz pointed out, must have certain essential attributes such as speed, accuracy and proper tone of voice (meaning a voice that is clear, natural and expressive.)

Subsequent training of operators, following their initial employment education, is Mrs. Schnautz said, "further development of skill in the use of fundamentals of operating learned in initial training, the acquiring of knowledge on those features omitted from the initial training, and the application of new practices." It is comprised of:

Continuation Training—Includes selected items from the analysis of the job which are not included in initial training and some of the infrequent items which were given initially.

Day-to-Day Training—The direction or assistance given the operator by her supervisor or chief operator in the course of her work.



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2	IPJ	Jacketed Inside Station Wire	—
3	ADCP	Aerial Exchange Cable	REA-PE-22
4	D	Inside Wiring Cable	—
5	8RDW	Figure 8 Rural Distribution Wire	—
6	RDW	Rural Distribution Wire	REA-PE-15
7	ADCP	Aerial Exchange Cable	REA-PE-22
8	PBW	One Pair Armored Burial Wire	REA-PE-24

No.	Cat. No.	Type	Specification
9	DBCP	Direct Burial Exchange Cable	REA-PE-23
10	OPDW	One Pair Aerial Distribution Wire	REA-PE-17
11	ADCP	Aerial Exchange Cable	REA-PE-22
12	—	Retractile Cords	—
13	AS48	Figure 8 Aerial Exchange Cable	—
14	IP	Inside Station Wire	—
15	ADCP	Aerial Exchange Cable	REA-PE-22
16	IPL	Parallel Inside Station Wire	—

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Progress Training—Determining, by observation, the individual operator's training needs, apprising her of progress in acquiring operator skills and establishing an individual training program for her.

Mrs. Schnautz felt that progress observation enables supervisors to recognize the company's tone of service. She listed observations used for determining the tone of service as follows:

(1) Speed—Does the operator speak too rapidly or too slowly?

(2) Enunciation—Does the operator speak indistinctly, run words together, or chop off words?

(3) Phrases—Is the operator using phrases which do not fit the situation or which are long and drawn out? Or does she use one of her own phrases? For instance does she say after disconnecting someone by mistake: "Oh! I pulled the wrong plug," or "I'm sorry, I pulled it by mistake." These unprofessional phrases give the subscriber little confidence in the operator handling her call.

(4) Volume—Does the operator speak too loudly or too softly to be heard by the subscriber?

(5) Helpfulness—Is the operator failing to make appropriate suggestions or to show her willingness to comply with customer's requests?

(6) Courteousness—Does the operator fail to express regret for errors or delays; give the impression of being hurried, or dispute with the customer?

(7) Businesslike attitude—Is the operator inattentive, or does she handle the customer in an unbusiness-like manner?

"Our tone of service," Mrs. Schnautz stated, "is the only means we have of convincing the customer that we are glad to be of service.

Employes are often only as efficient as those who supervise them. Raymond A. Bolerjack of the General Telephone Co. of the Southwest, San Angelo, Tex., spoke on "Selection of Supervisory and Management People."

Supervisors will determine, Mr. Bolerjack stated, "the kind of thinking that prevails in a company, the approach to problem solving, investments, business decisions that affect . . . profits (and) efficiency."

Therefore, Mr. Bolerjack stressed, scientific selection of employes is necessary. This involves "the careful bringing together of human ingredients and job requirements to the end result that individuals may fit the job, not the job fit . . . the individual."

The first step in scientific selection, he stated, is job analysis—the discovery of distinctive job requirements for each position. This should show what kinds, and how much, experience will be needed to fill the job.

Attitudes and interests are also important. Any belief that involves the supervisor's interaction with people is significant.

Interest needs to be measured, Mr. Bolerjack said, since the kind of work we are interested in, is the kind of work we do best.

Answering the question, "how do we measure human beings?" Mr. Bolerjack mentioned that observation is one method of gathering information, but should never be the only method.

Besides observation of the individual, listening to his views, observing his values and his success pattern will tell you much about him, Mr. Bolerjack said. Another measurement tool he mentioned is the judgment made of the man in question by other supervisors.

Also significant are psychological tests, but they should not be used to provide all the information known about a man, Bolerjack emphasized.

If there aren't sufficient operators to answer signals, service is poor. Therefore, Mrs. Burnett pointed out, "the ebb and flow of traffic demands planned force adjustment."

R. E. Paulsen, traffic supervisor of the Southwestern States Telephone Co., Brownwood, spoke on "Planning—Force Adjustment Surveys."

Force adjustment, Mr. Paulsen said, is the scheduling of operator hours to fit the calls, since calls cannot be scheduled to the operator hours.

In order to have a basis for determining the number and types of calls handled, Mr. Paulsen suggested the use of: Past records, peg count records and a count of toll tickets disposed of. Adding to these basic records a knowledge of local happenings and special events is also helpful in estimating calls.

Once information is obtained for estimating, reference must be made, according to Mr. Paulsen, to loads and coefficients. He explained them as follows:

"Coefficients recognize the difference in operator time required to handle the different types of calls. Through the use of coefficients, all calls are converted into units. All units are equal—whether toll, local manual, information or whatever type call is involved. Loads, then, are expressed in units per hour."

Once the load an office can carry is determined, it can be used, Mr. Paulsen said, to decide on the number of people required. From this, schedules, taking into account the operator requirements for a given period of time, can be established.

Surveys are then necessary, Mr. Paulsen stressed, to see how well the job of force adjustment has been done.

These should determine what kinds of loads were carried and what kind of service was given.

He said that dividing total office units by the number of employe hours will show how close the adjustment is to objective load.

Service can be measured he stated by: Observation of signals and operators' work and by answering time

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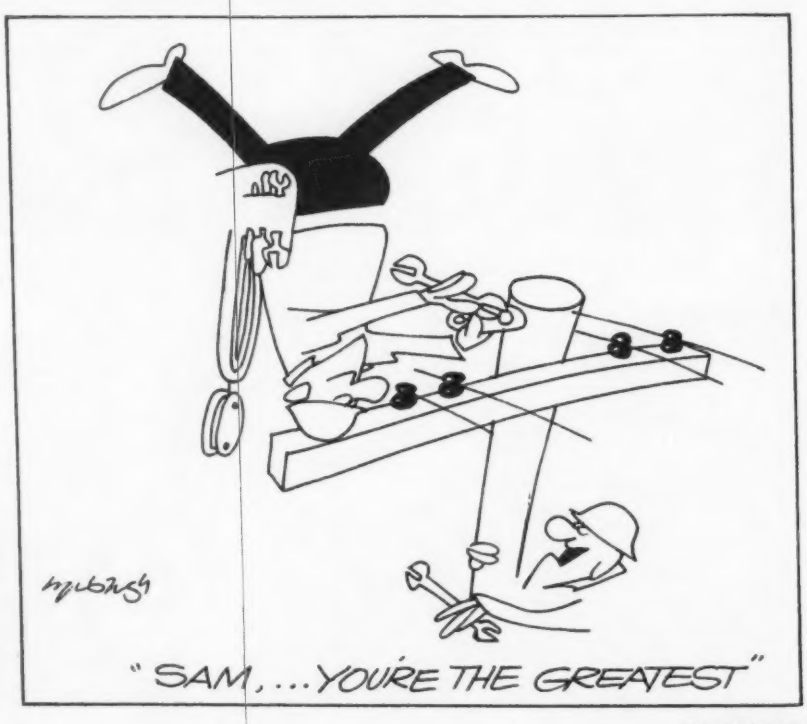

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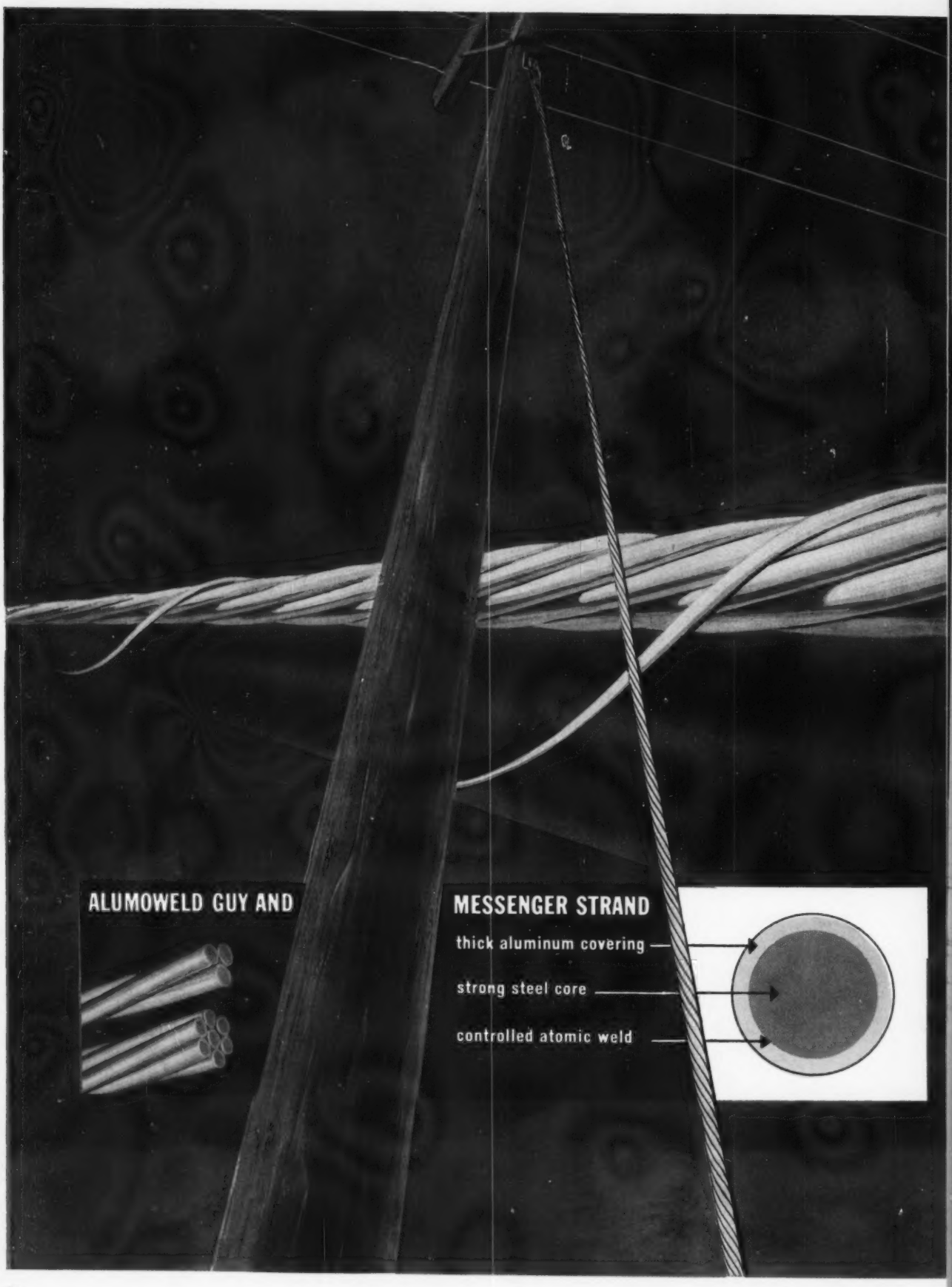
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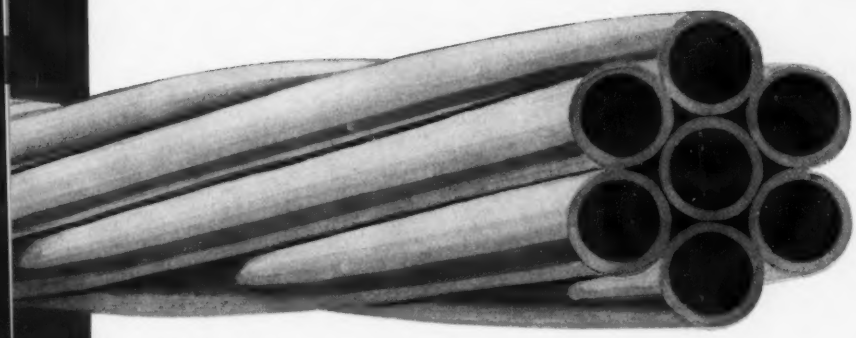
Are you taking advantage of ALUMOWELD STRAND for guys and messengers?



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Benefits of force adjustment, he said, include the appreciation felt by the operating force for the ability to work at a uniform speed; the fact that chief operators do not have to make last minute adjustments, the decreasing of expenses and the improvement of service.

Good service also depends on good transmisson of the customer's voice. F. E. Elrod of the General Telephone Co. of the Southwest, San Angelo, speaking at the plant conference, made this point in his talk "Transmission Limits."

Ken Madry of the Southwestern States Telephone Co., Brownwood, chairman of the committee, presided over the plant conference.

Also featured at the conference was a demonstration entitled, "Voices Across Time and Space," narrated by Jim Sage, public information supervisor of Southwestern Bell Telephone Co., Houston.

The telephone industry must prove that it does the best job of providing communications service. C. C. Pearce, president of the United States Independent Telephone Association stressed that the industry must be vital enough to cope with anything the future may hold. In his talk, "Our Role in the Sixties," he stated that the telephone industry must be able to adjust to changing situations.

"An uncertain, unstable state tax policy is a deterrent to industrial development — especially with taxes as high as they are today," Alvin A. Burger, executive director of the Texas Research League told conventioneers.

Because a business climate to a large extent determines the quality of a company's service, conventioneers found much of interest in Mr. Burger's remarks. The Texas Research League is a privately supported, non-profit, non-political education corporation, devoted to research in the field of Texas government. The league undertakes its studies only by official request, without cost to the state. These studies are financed wholly by the contributions of Texas individuals and business firms.

Mr. Burger continued: "Our apparent inability to put our state's financial house in order, and let it alone for any length of time, is the big minus in our state tax policy as it relates to future industrial development in Texas."

However, he said, in our preoccupation with the tax side of the problem, we mustn't overlook what can be done to keep spending down. He stated:

"With tax burdens at an all time high, we need also to scrutinize carefully all new spending proposals. One of the proposed new spending programs is one of medical care for public assistance recipients.

"The plan now being considered is a federally legislated one calling for joint federal-state financing. The state would put up about 9 million dollars annually, and the federal government as much as 26 million dollars, making a total of 35 million dollars annually.

"Our league is submitting to the State Welfare Department a report of a study we have made, which shows that our public assistance recipients are now receiving more than 42 million dollars of medical care annually from public and private sources. This will come as news to most people, including our legislators.

"The study shows that, of the state's 319,000 public assistance cases, there are only about 9,000 having unmet medical needs who are respondable to any type of new medical care program. Our report proposes a wholly state-financed plan designed to take adequate care of these respondable cases. It would cost less than 2 million dollars annually, compared with 9 million dollars the state would put up under the federal plan now being considered.

"We recommend that the federal funds be declined, since federal law requires these funds to be spread out among all public assistance recipients in the state, somewhat on the basis of a welfare dole. Our study maintains that the 9,000 truly needy cases would be only partially cared for, at best, under the expensive federal-state plan. Governor Daniel has urged the Legislature to give serious study to our proposal. Let's see whether it will."

Mr. Burger concluded that if taxes are to be increased anywhere, let it be at the state and local level, where we stand a better chance of seeing just how our money is spent.

"For," he said, "it will cost us much more, both in taxes and in freedom, if we abdicate any more of our local responsibilities to a far-off central bureaucracy, where those knowing the least about them, and having the least concern for their well-working would exercise control over them."

Providing communications services was deemed a privilege, by Ben Smith, general merchandising manager of Southwestern Bell Telephone Co., in his talk, "Markets for Profitable Telephone Service in the '60's."

"This privilege," he stated, "carries an important responsibility to offer the newest, best and most serviceable equipment to this public, our customers."

"You'll note I refer to 'communications services' and not to 'telephone services', " Mr. Smith added. "We used to be in the telephone business, but rising competition and new communications techniques demand that we broaden this viewpoint. If we don't learn to think of providing total communications services in our business, we may not have any business at all in the future."

He said that marketing has taken on a more important role than ever before in the telephone industry, due to increasing competition and new communications techniques.

Mr. Smith gave the TTA members his definition of marketing as: "What you sell, where and when you sell it, how and why you sell it and to whom you sell it. Doing these things right will determine your profits."

He stressed two important telephone sales markets—residence color extensions and farm service.

"Put our marketing yardstick on residence extension sales," Smith said. "Extensions are the 'what' of our marketing program. We got the 'why' by asking customers their reasons for wanting additional telephones in their homes. They told us they buy extension telephones to save steps and time and for convenience. Customers also told us that the kitchen and bedroom are their favorite locations for extension telephones. There is a market here, because, of course, every home has a kitchen and the average home has 2.22 bedrooms. In fact, 81 per cent of the homes have two bedrooms or more. So these locations are the 'where' of our sales program."

"Now we must decide 'to whom' we can sell," he continued. "This is easy, too, because surveys show us that most one-telephone homes have these telephones in the living room, dining room or hall. So we have plenty of customers."

As for the "how" to sell, Mr. Smith stressed showing the customer the product—the color telephone.

"People want color telephones but they must see them," he pointed out. "We must show them the very latest equipment on the market. This is part of our responsibility to our customers."

Smith told the group that the farm market can also be a profitable one.

"Farmers view telephone service as very necessary, and they are receptive to new services that will make the telephone more useful and convenient," he said.

The farm market, too, is part of the industry's responsibility, he added. Telephone companies must provide the communications services farmers want, and need, and must offer these services to farm customers.

The telephone industry has always been proof of the American philosophy of "probe it, prove it, and produce

(Continued on page 105)

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ALL-WEATHER CORE permits splicing or terminating without the need of restoring jacket. Constant exposure to weather does not affect physical or electrical characteristics.

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Low-cost, speedy installation • Less maintenance

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- **High-density black polyethylene conductor insulation**
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- **Tough, polyethylene jacket extruded overall**
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- **No special installation hardware**

Order Superior IM-RDW for subscriber line use or for the distribution of subscriber circuits from a main cable lead. Available one through eighteen pairs.

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**Patent applied for*

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5392

The Plant Man's NOTEBOOK

By RAY BLAIN, Technical Editorial Director

THE General Services Administration (GSA) and the Office of Civil & Defense Mobilization (OCDM) have announced plans for a unified telecommunications system for civilian agencies of the government. This is the civilian counterpart of the Defense Communications Agency, established by the Department of Defense to exercise operational control and supervision over the Defense Communications System, and which was described on this page in the Mar. 25 issue.

This new system, to be known as the Federal Telecommunications System (FTS), will be administered by General Services Administration. It is designed to serve the civilian agencies more efficiently and economically on a day-to-day basis.

Administrator of General Services, John L. Moore, and Director of Civil and Defense Mobilization, Frank B. Ellis, both stressed the fact that this system is a long-needed development and will incorporate engineering features that will prove of great value in a national emergency. They also indicated that the unified system is the outgrowth of a plan developed by the Office of Civil and Defense Mobilization from experience gained in civil defense exercises. A further refinement of the plan by a GSA study group has produced the concept of the Federal Telecommunciations System.

The estimated operating cost of the improved system will be roughly equal to the total cost of the less efficient systems now operated by the individual agencies. The new system will connect some 8,000 government offices in approximately 1,750 cities and towns in the 50 states, the commonwealth of Puerto Rico and the Virgin Islands. It will include voice, teletypewriter, data and facsimile services and will be interconnected with military and commercial systems.

The new unified system will make extensive use of direct-distance dialing, using multi-channel routing, with switching centers strategically located so that messages could by-pass probable target areas. The new system will also have the capability of rapid expansion.

The Federal Telecommunications System will be implemented in stages in order to provide maximum economy and efficiency during the transition period. Completion of the system will require about three years.

•

General Telephone of Ohio reports that with the recent conversions of its Garrettsville and Gibsonburg exchanges, the percentage of dial-operated telephones increased to about 90 per cent.

•

A cable plow is now available that can be attached to any tractor having sufficient power. It's equipped with a standard 3-point hitch. This plow will handle cable up to 1⅜-inch diameter and to a maximum depth of 30 inches. It has a minimum turning radius of 14 feet with the standard in the ground. The weight of the plow is approximately 438 pounds.

The forward edge of the standard easily breaks through hard surfaces for use in making installations along roads and through asphalt driveways or tarred streets. The round point at the base of the standard is said to minimize lifting or shattering.

When the plow strikes a hidden obstruction, a shear bolt falls, allowing the standard to pivot rearward, thereby preventing damage to the plow and the cable. The foot of the standard is designed so that the cable will not kink as the standard pivots rearward. The upper cable guard swivels and hinges, providing protection for the cable.

A spring-loaded coulter may be installed for use in sod or trashy areas, and is recommended when working over established lawns. The coulter is adjustable, and may be raised completely out of the way when not required.

•

It is rather surprising, and at the same time gratifying, to learn that so many teenagers are becoming interested in telephony as a hobby.

John F. Maxfield, 19 years old, of Ann Arbor, Mich., is the latest to write telling us of his hobby. He is a first-year student at the Lawrence Institute of Technology in Detroit. He is presently building a common-battery crossbar and electronic switching system. This equipment is all mounted on a 6-foot, three-section relay rack located in his basement. He has some extra telephone equipment that he will be pleased to give to other telephone experimenters.

We also have a letter from Stephen W. Gregory, another teen-age telephone experimenter from Rockport, Ind. He also sends us his term paper, "The History of the Telephone Industry," which we consider an outstanding accomplishment. This young man is presently considering a summer job with an Independent telephone company in southern Indiana.

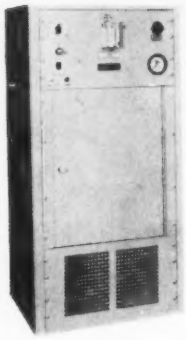
•

With reference to automation, we often hear people voice concern about the negative effects of machines on men. A recent report states that the training of 20,000 new full-time computer programmers will be required to handle data processing equipment now on order. Moreover, a large number of people now in computing will be devoting much of their time to training new programmers and maintenance specialists.

•

The writer recently attended the first meeting of the committee to arrange for the 1961 Wire & Cable Symposium. This meeting will be held in the Berke-

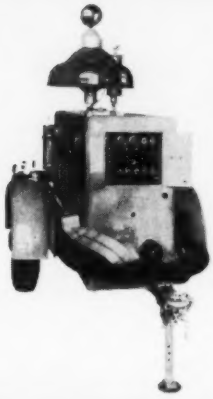
Pioneers in CONTINUOUS FEED PRESSURE SYSTEMS & MAINTENANCE EQUIPMENT



AIR COMPRESSOR DEHYDRATORS

Dehydrators in all sizes and capacities — economical — dependable — low operating cost. Shown is our popular Model RC, but we have other models available. We suggest you write for additional information.

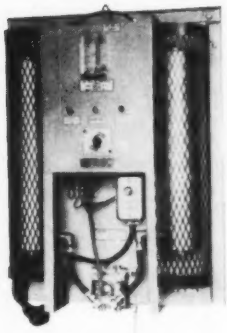
Bulletins No. RC-1-61, RCA-1-61, RCH-1-61



MOBILE POWER UNITS

Portable generator, pump, air compressor and desiccant dryer used for underground cable splicing and similar work — can be set up and operated by one man.

Write for Bulletin MPU-1-61



MODEL AD-15 AIR DRYER

The air dryer for instruments and pneumatic controls which features a simple, positive and trouble free air circuit—economical to operate and maintain—completely automatic—for wall mounting.

Write for Bulletin No. AD-15-1-61

CABLE REEL PRESSURE ALARM

PART NO. 8279

Used when cable is plowed in under pressure. When cable sheath is damaged in process of plowing in, the alarm will sound indicating damage of sheath and location can be marked and damages repaired.

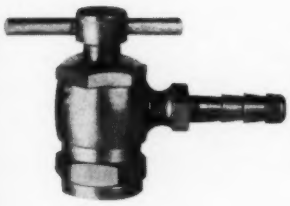
Write for Bulletin No. 8279-1-61

DUAL PRESSURE KIT

PART NO. 8250

Used for providing lower pressure air to cable network where needed, this kit is provided with a Hi-Lo Contactor and Alarm circuit. It is supplied in a steel box approximately 3"x7"x11" and can be wall or bracket mounted.

Write for Bulletin No. 8250-1-61



PRESSURE TESTING CHUCK

PART NO. 8272

A new design pressure testing chuck with swivel nut to screw on pressure testing valve and 3/16" hose connector. This pressure testing chuck is guaranteed leakproof.

Write for Bulletin No. 8272-1-61

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S & G EQUIPMENT MEANS QUALITY, ECONOMY AND DEPENDABILITY

ley-Carteret Hotel, Asbury Park, N. J., on Nov. 29 and 30 and Dec. 1.

The symposium is jointly sponsored by the U. S. Army Signal Research & Development Laboratory and industry. This being the 10th annual meeting, the theme this year will be "a decade of progress in wire and cable."

Anyone desiring information on this meeting should contact the committee chairman, H. F. X. Kingsley, Wire & Cable Symposium Committee, Communications Department, U. S. Army Signal Research & Development Laboratory, Fort Monmouth, N. J.

•

We recently noticed an automobile whip-type antenna that was broken off about 3 inches above the fender. A wire coat hanger had been formed in a "V" shape and the hook jammed into the short length of antenna tube.

We were advised that this performed as well or better than the original whip antenna. It would now seem that the communications industry has a use for old wire coat hangers.

•

On Jan. 26, a weekday, a heavy snow began falling on the Nation's Capital around noon. On that day, 477,000 calls were made to WEather, and Information calls climbed past the 130,000 mark.

On a normal January day, calls to WEather total about 60,000, and to Information, about 120,000. In addition, some telephone offices in Washington handled more long distance calls than on Christmas, which is normally the busiest day of the year for long distance business. Because of the storm on that snowy January day, when government and many other employes were sent home early, telephone calls in the Washington metropolitan area totaled about 6,300,000.

•

Ninety-three of every 100 eligible General Telephone System employes voted in the 1960 Presidential election, according to a recent voting survey conducted throughout the system. This voting turnout was well above the 1960 national average of 65.8 per cent.

Several General companies indicated a 100 per cent turnout of eligible voters polled.

•

The new paint job on the Capitol dome in Washington, D. C., required 1,000 gallons of white paint.

•

It is always better to fill a little place right than a big place wrong.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Will you please explain the saturable inductors and how they are used?

A. Saturable inductors are used for the purpose of eliminating transmission loss due to bridged taps. They provide for more flexible operation of loaded and non-loaded circuits and will result in economies both in equipment and outside plant.

In use, the inductor is placed in each bridged leg, and it functions as a switch. When dc is not flowing through the inductor, its impedance is very high; i.e., greater than 10,000 ohms at 1,000 cps. When dc flows through the inductor, as when a bridged telephone is off-hook, its impedance drops to less than 50 ohms. When there is no current flow through the inductor, i.e., under on-hook telephone-bridged conditions, the bridging loss of the inductor is about 0.05 db.

Q. What advantage, if any, can be claimed for the dry-type CEMF cells in a telephone exchange?

A. These new dry-type cells do not give off explosive gases, and do not require constant addition of liquid to replace that consumed through electrolysis. They are rugged in construction and are relatively insensitive to shock. Thus, they are virtually maintenance-free and can be mounted in a variety of positions. This feature provides a wide range of designer's choice in location of the cells; permits the saving of floor space; economy in the wiring; and utilization of available relay rack space. The adaptability of these cells to relay rack mounting is particularly advantageous in many installations.

•

Q. What is considered the most satisfactory means of controlling the lights, during the hours of darkness, in a remotely located outdoor-type telephone booth?

A. In our opinion, the best control method for this purpose is to make use of the photo-electronic light switch. This device requires no "setting" or "resetting." It is also economical, because the lights are on only when needed. This switch is easily installed —just plug into a 110-volt outlet. Then, plug the lights to be controlled into the control plug. When daylight fades, the lights will go on and stay on until dawn, unless turned off manually. The maximum lamp load is 300 watts. The case of this device measures 3½ inches x 3½ inches x 4½ inches. Its shipping weight is 3 pounds. It can be purchased from your telephone supply house at a nominal price.

•

Q. Will you please advise how we can construct vibration dampers for use on open wire to prevent damage from vibration?

A. Suitable dampers made of weather-resistant flexible polyethylene, slit helically for easier installation on the wire, can be purchased from your telephone supply house. The dimensions of this damper are ¼-inch inside diameter x .062-inch wall x 18 inches in length.

A length of this damper placed on the line wire in each span absorbs all wind vibrations, thus damping out high-frequency, low-amplitude vibrations which might bend and injure the wire at the point of support.

•

Q. What means may be used to protect creosoted poles, located along and near roadways? We find that these poles do not reflect the light from passing automobiles and they are frequently struck and damaged.

A. It is suggested that you consider the use of Scotchlite delineators. These are strips of aluminum covered with tiny glass particles that reflect light and make poles visible. These strips can be attached to poles by using nails or wood screws. Two sizes of strips are available from your telephone supply house: 2 inches x 10 inches and 2 inches x 16 inches.

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of multiple guys using the

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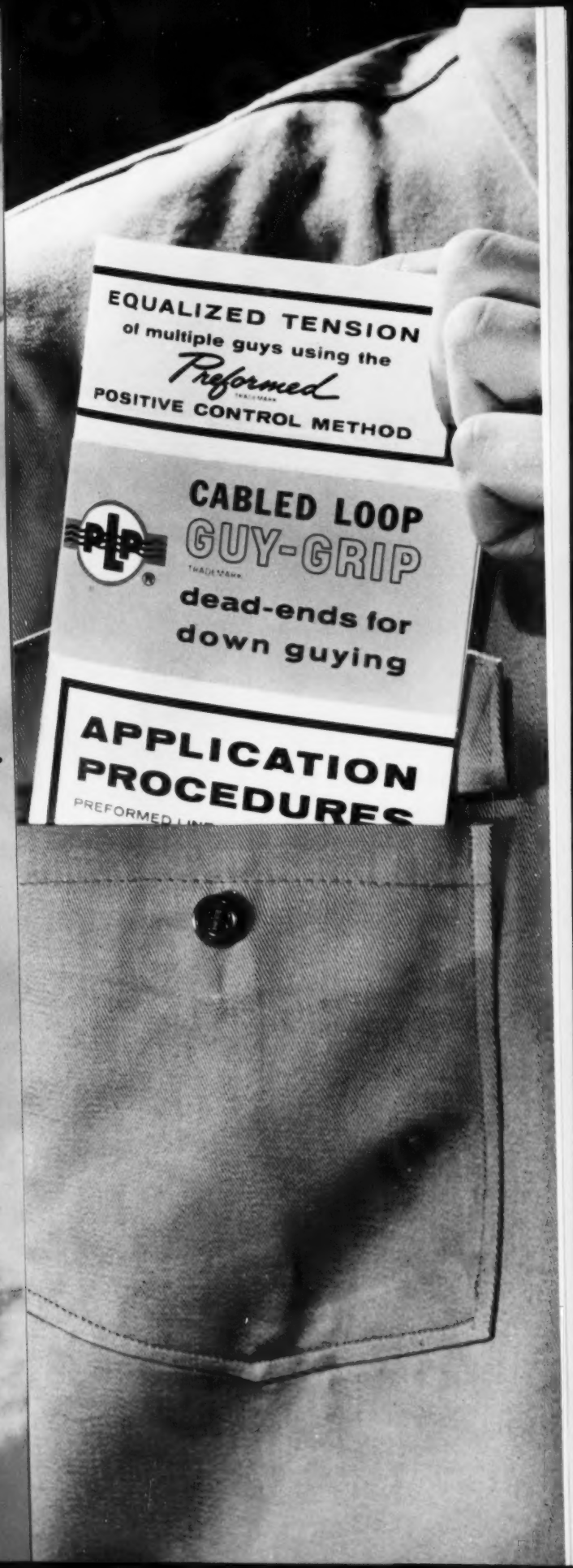
Write today for the new pocket-sized application booklet, or the file-sized brochure, covering *complete guying procedure* with the CABLED LOOP GUY-GRIP dead-ends.



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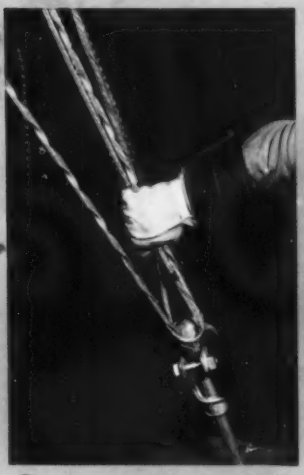

① Tension the new guy until the existing guy goes slightly slack —then cut the strand about 3" above the rod eye, and align the loop of the GUY-GRIP dead-end and the rod eye.

② EASI
with
CABL
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GUY-G
TRADEMARK
dead-e

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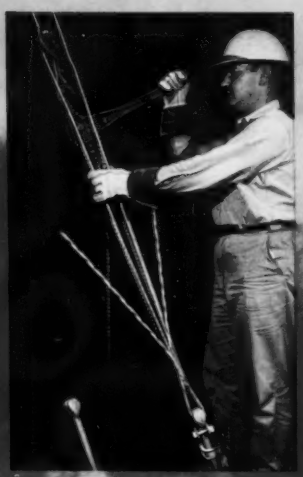
w these key steps...

(shown here by a PREFORMED demonstrator)

② Wrap one leg of the GUY-GRIP dead-end onto the strand several turns (as far as the *second* cross-over mark.)

③ Simultaneously wrap on the second leg of the GUY-GRIP dead-end as far as the second cross-over mark.



④ Back off the hoist until both guys are even. Complete the application of the GUY-GRIP dead-end to the strand. Repeat these steps for additional guys...

⑤ ...and you're sure the tension is equalized.

SIER
ith
BLED
OOP
-GRIP
d-ends

CABLED LOOP
GUY-GRIP
TRADEMARK
dead-ends

SAFEST, FASTEST, and MOST ECONOMICAL method of multiple or single guying

- Easiest for all joint pole construction.
- Compatible materials.
- Easier guying with *high strength strands* — no strand bending required.
- No concentrated stress on strand.
- Less pole rake required.

The product in this advertisement is manufactured under one or more of the following: U.S. Patent No. 2,691,865 and 2,761,273; other patents pending.

Courts and Commissions

Washington PSC Approves Financing, Sales Pleas

The Washington Public Service Commission has recently taken the following actions:

The Inter-Island Telephone Co., Inc., Friday Harbor, was allowed to issue its note in the principal amount of $51,000 to Stromberg-Carlson Co. Proceeds will be used to refund short-term notes which had been used to finance additional plant facilities.

•

The McCleary Telephone Co. was allowed to issue a note for $100,000 to the Automatic Electric Sales Corp. Proceeds will be used to construct a new office building, to install new central office equipment and to rehabilitate outside plant.

•

The Columbia Basin Telephone Co., formerly the Connell Telephone Co. (TELEPHONY, Jan. 14) was given permission to purchase General Telephone Co. of the Northwest's exchanges at Eltopia and Mesa. The Columbia Basin company was also allowed to issue and sell 700 shares of its $100 par value common stock. The proceeds are to be used to construct and improve facilities throughout the area.

•

The commission also approved the sale of Washington Utilities Inc., Quilcene, to the East Peninsula Telephone Co. The officers of East Peninsula, a new corporation, are Maurice R. Hull, president; Caroline N. Hull, vice president; and Betty Hull, secretary. Incorporators of the East Peninsula company are Mr. Hull, Irvin L. Treiger and Charles F. Osborn.

Rate Hearings in Wisconsin

The Wisconsin Public Service Commission was to have heard the rate applications of Bergen Telephone Co. and the Strum Telephone Co. on Apr. 17, and the West Wisconsin Telephone Cooperative, Inc., Downsville, on Apr. 20. In the case of the Bergen company, the application was for establishment of rates for its services; both Strum Telephone and the West Wisconsin cooperative asked for increased rates.

Total Raise Granted Cal. Company Amounts to $89,720

The Kern Mutual Telephone Co., Taft, on Apr. 4 was granted a rate increase by the California Public Utilities Commission (TELEPHONY, Dec. 3, 1960). The company had asked for a $147,565 rate increase on Aug. 15, 1960 and on Nov. 7 had been granted interim rates amounting to $65,550. The final action on Apr. 4 authorized increases amounting to another $24,000, making the total granted $89,720. This figure will give the company a 6.7 per cent return on an average depreciated rate base of $1,707,500.

The Kern company operates exchanges at Buttonwillow, Cuyama, McKittrick and Taft serving approximately 8,200 stations. Up until the interim rates granted in November, the company had not had a rate increase in its entire 52 years of operation.

The company currently settles with Pacific Telephone & Telegraph Co. for interchanged message toll telephone traffic on a basis other than cost. The company during the hearings reported that it intended to negotiate a cost settlement within perhaps 90 days. The PUC's decision states that: "This proceeding will be reopened to consider the effect on operating results should (the Kern company) in fact negotiate a new toll settlement agreement with Pacific telephone within a reasonable period."

The commission mentioned that the company receives certain services from two affiliated companies — the Central Western Co. and the Medusa Equipment Corp.

The commission said: "We find (the Kern company's) recorded payments to its affiliates at this time, and for the purposes of this proceeding to be reasonable. However, (the Kern company) is placed on notice that its relationships with affiliated companies will continue in the future to be closely scrutinized by the commission."

Present rates, those requested by the company, and those authorized by the commission are as follows:

	Business			Residence		
	Present	Requested	Authorized	Present	Requested	Authorized
Buttonwillow						
One-party	$3.25	$7.00	$7.00	$2.75	$4.75	$3.55
Four-party	2.50	5.00	5.00	2.00	3.25	2.35
Ten-party suburban	2.75	5.10	5.10	2.25	3.60	2.60
Cuyama						
One-party	6.75	6.75	6.75	4.50	4.50	4.50
Two-party	5.50	5.50	5.50	—	—	—
Four-party	—	—	—	3.10	3.10	3.10
Ten-party suburban	5.00	5.00	5.00	3.60	3.60	3.60
McKittrick						
One-party	3.25	6.75	6.50	2.75	4.50	3.55
Two-party	2.75	5.50	5.10	2.25	3.75	2.85
Four-party	2.25	4.75	4.50	2.00	3.10	2.35
Ten-party suburban	4.50	5.00	4.85	3.20	3.60	3.20
Taft						
One-party	4.50	8.50	7.75	3.25	5.00	4.05
Two-party	4.00	6.50	6.10	2.75	3.95	3.35
Four-party	3.50	5.90	5.50	2.25	3.40	2.60
Ten-party suburban	5.00	5.35	5.35	3.45	3.60	3.45

York T&T, Pa. Bell Property Agreement Is Announced

An agreement covering the purchase of certain facilities of The Bell Telephone Co. of Pennsylvania within the operating area of the York (Pa.) Telephone & Telegraph Co. has been announced jointly by the two companies.

Under terms of the agreement, subject to approval of the Pennsylvania Public Utility Commission, YT&T will acquire Bell's long distance switchboard facilities and other associated toll equipment, including 55 toll operator positions, and Bell's buildings in York, as of July 1.

All present Bell employes will be offered employment with the York company, with full service and seniority credit for their terms of employment with Bell, or will be retained by Bell at another location, the announcement stated.

C. E. McCormick, YT&T president, said the purchase of the Bell facilities is a reflection of the policy of the General System to endeavor to conduct all long distance operations in its local operating areas.

"Acquisition of these facilities," Mr. McCormick said, "will enable us to take immediate steps to expand and inte-

compare cost, design and installation time

ACHIEVERFONE

AChieverfone combines low cost, reliability, advanced design and fast installation, giving you and your customers the most outstanding mobile radiotelephone on the market.

Start with cost. Instead of three or more units, AChieverfone has only two units: the control head and the R-T unit. This means AChieverfone costs less than other systems.

Next, take design. AChieverfone is as modern and attractive as today's newest home telephones making MRS more appealing to your subscribers.

Finally, consider installation time. AChieverfone can be installed in just two hours. Only eight screws are required to mount the two units. The interconnecting cabling is plugged into these two units, thus eliminating tedious wiring in the vehicle.

These facts make AChieverfone the best common carrier MRS system you can buy. For more information write or call AC today.

SPECIFICATIONS—FCC Type Accepted

Transmitter: 144-174 Mc, 4-Channel
RF output: 22.5 watts into 52 ohm load

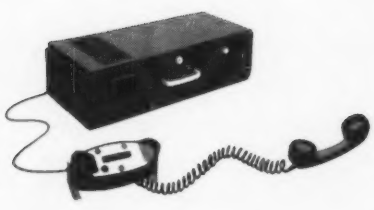
Receiver: 144-174 Mc, 4-Channel
Wide Band (60kc) or Narrow Band (30kc) models available (Bands quickly converted to Narrow or Wide by substituting IF filter)

Frequency Stability: within 0.0005%

Selective Signaling: 51,000 five-digit (compatible, 2-tone sequential) codes available

Size: Receiver-Transmitter, 21⅛" x 8⅞" x 6¼"

Weight: 37.25 pounds, including receiver-transmitter, control head and cable



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grate service as it affects our county toll operations, as well as to plan future moves to further integrate service between the York area and outside points."

Murdock McLeod, vice president and general manager of the Bell of Pennsylvania central area, said the agreement is in line with Bell's long-standing policy of working with Independent telephone companies to enable them to furnish complete service within their own territories.

Reject Use of Current Value Base for C&P of Maryland

The Maryland Public Service Commission has denied the Chesapeake & Potomac Telephone Co. of Maryland all but $458,000 of a 13.5-million-dollar increase requested by the company (TELEPHONY, Apr. 23, 1960).

The C&P company had asked that its rate base be computed on the current cost of its plant and equipment, instead of original cost. The commission unanimously rejected this approach.

The company's 1960 income amounted to a 6.23 per cent return on a rate base of $321,185,000. The increase allowed will give it a 6.3 per cent return.

The commission concluded "upon consideration of all the evidence," that the current approach to the rate base has "produced results that have been fair and adequate insofar as the company and its investors are concerned . . ."

In April 1959, Wilfred T. McQuaid, outgoing Maryland people's counsel, had charged that the C&P company was earning more than its authorized rate of return and ought to refund 6 million dollars to subscribers. The company then asked to revise the rate base.

The counsel's petition was rejected (TELEPHONY, Mar. 12, 1960) and the commission in March 1960 started hearings on the question of a proper rate base.

The C&P company has stated that an original-cost-less-depreciation rate base weakens the company's capital structure at a time when the company is expanding. L. Mercer Smith, C&P vice president, said that the company has spent 250 million dollars for expansion over the past five years. He said that the company must have adequate earnings if it is to continue providing better service.

Approve Sale in Minnesota

The Minnesota Railroad & Warehouse Commission on Apr. 10 approved the sale of the Boy River Township Telephone Co. to the Johnson Telephone Co., Inc., Remer.

Authorize Wis. Stock, Bond Issues for Expansion

The Wisconsin Public Service Commission has approved the issuance of $7,500 in stock and of $77,000 in notes by the Gleason Telephone Co., it was reported on Mar. 24.

•

Also in Wisconsin, the commission has approved the request of Farmers Union Telephone Co., Middleton, for a $350,000 bond issue to finance service extensions.

GT&E Acquires Capital Stock of Cal. Company

All of the common capital stock of the Delta Telephone & Telegraph Co., Courtland, Cal. has been acquired by the General Telephone & Electronics Corp.

The Delta company provides telephone service in northern California, serving about 2,600 stations from four dial central offices. A fifth C.O. is under construction.

Obituaries

FRANK S. CARLILE, 72, co-founder of the C & D Batteries Division of The Electric Autolite Co., died suddenly on Mar. 30 in Valparaiso, Chile, while on a vacation trip with Mrs. Carlile.

F. S. CARLILE

Mr. Carlile and the late Leon A. Doughty founded the firm of Carlile & Doughty in 1906, and Mr. Carlile remained active with C & D Batteries until the start of his vacation. He was board chairman from May, 1957 (when Mr. Doughty died) until September, 1959. C & D Batteries was purchased by The Electric Autolite Co. on Sept. 30, 1959, at which time Mr. Carlile began serving as consultant to the company.

Mr. Carlile was born in Philadelphia. He and Mr. Doughty were student friends in their high school days, and formed their first partnership—for wiring stores, plants and apartment houses—in the early days of the century.

Later, they pioneered in various directions—for example, in the electrical field, in the manufacture of automobile batteries. They also specialized in heavy-duty batteries to power electric autos and street trucks during the early twenties. They launched into broad-scale heavy-duty industrial battery production after the formation of C&D Batteries.

Surviving are the widow; a son, Louis M. Eble Jr., C&D director of purchases; two daughters, Mrs. John H. Sheppard, and Miss Selma Jane Eble; and seven grandchildren.

•

L. V. STINSON, 87, retired production manager and sales engineer for L. M. Berry & Co., died on Mar. 9 in his home in Dayton, O.

Born in Richmond, Ind., Mr. Stinson entered the telephone industry in 1903, joining the Central Union Telephone Co. in Indianapolis, Ind.

He later became involved in telephone directory publishing, becoming associated with R. R. Donnelley & Sons Co.

In April, 1925, he joined L. M. Berry & Co. He retired in 1948.

Pass Excise Resolve in Wash.

The House of Representatives of the state of Washington has passed a resolution petitioning "the Congress of the United States to remove the unfair and inequitable tax upon communications and transportation services during the current session of Congress." Copies of the resolution were sent to President Kennedy, Vice President Johnson, congressmen and senators from the state of Washington, and all members of the House Ways and Means Committee.

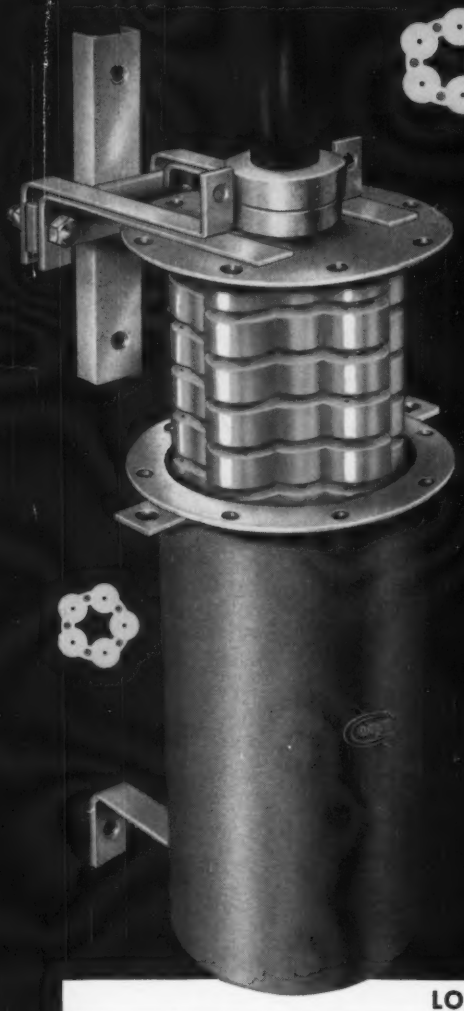
Canadian Stock Purchase

The Northern Telephone Ltd., New Liskeard, Ontario, Canada, has purchased all the outstanding shares of the Lake St. Joseph Telephone Co., Pickle Crow, Ont. The Lake St. Joseph company serves Pickle Crow Gold Mines, Ltd. and surrounding areas.

Authorize Michigan Sale

Approval of the sale of the Hope Telephone Co. to the Lake City Telephone Co. has been given by the Michigan Public Service Commission.

It's Expansible!



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EXPANDABLE COIL CASE

with 88 mh or 44 mh LOADING COILS

LOADING COIL ELECTRICAL PROPERTIES

Type of Coil	CHARACTERISTICS							
	Nominal Inductance (MH)	Inductance Unbalance (%) Maximum	D.C. Resistance (Ohms) Maximum	D.C. Resistance Unbalance (Ohms) Maximum	Effective Resistance (Ohms) Maximum	Dielectric Strength Between Winding (D.C. Volts) Minimum	Insulation Resistance (Megohms) Minimum	Cross Talk Loss Between Adjacent Coils (Decibles)
613-344	44	.5	5.4	.2	7.1	10,000	10,000	90 or Greater
614-343	88	.5	9.0	.2	11.0	10,000	10,000	90 or Greater

COOK ELECTRIC Company

Since 1897

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LEFT PHOTO: W. Gilman Snyder, president of Western California Telephone Co., Weaverville, places Direct Distance Dialing call with full person-to-person, collect and special services (PPCS) to C. B. Miller, president of Allied Telephone Co., Fordyce, Ark. Watching Mr. Snyder are (from left) Elwin Bagley, general manager for the Western California Company; Ralph M. Smith, Stromberg-Carlson salesman; E. Floyd Ross, president of Parker Valley Telephone Co., Parker, Ariz.; Fred E. McGrady, sales engineer for the Stromberg-Carlson toll ticketing equipment. RIGHT PHOTO: Attending installation ceremonies at Fordyce, Ark., were (from left) Hugh Wilbourn, general manager of Allied Telephone Co.; Arkansas' governor, Orval Faubus; Mr. Smith, executive assistant to the governor, and T. C. Thompson, general sales manager for Stromberg-Carlson products.

2 Independents Choose Same Time to Start DDD + PPCS

At Fordyce, Ark., and Weaverville, Cal., midnight on March 18 saw the activation of Direct Distance Dialing with full person-to-person, collect and special services (PPCS) included in the automated system. Because of the difference in time zones, the Arkansas system had a two-hour lead, but to W. Gilman Snyder, president of Western Telephone Co. in northern California, went the thrill of placing the first Independent PPCS-to-PPCS call ever made.

President C. B. Miller of Allied Telephone Co. invited Arkansas' governor, Orval Faubus, to be guest of honor when the 1,200-line XY Dial system and XY Toll Ticketing equipment were placed in service. Governor Faubus called John A. Baker, REA official in Washington and a former resident of Paris, Ark. The governor, addressing a large group of subscribers, recalled that as a boy he often served as a "runner" to relay important messages because there were no telephones in his home town of Combs.

C. B. Miller, head of Allied Telephone Co., receives DDD-PPCS call at Fordyce from W. G. Snyder.

About 2,500 subscribers in a five-town area served by Allied Telephone Co. will have direct access to 40 million telephones for both station-to-station *and* person-to-person, collect and special handling calls. It is believed that this is the first time such service has ever been available to *all* subscribers in a large area.

At Weaverville, Cal., there was a smooth transition to the automated toll ticketing system. Shortly after Mr. Snyder placed the first PPCS call to congratulate the officials at Fordyce, people in various parts of the country were rudely awakened by a call from one or another of Western Telephone's 3,500 subscribers—each wanting to be first to see how the revolutionary system worked.

Macphail of B. C. Telephone Heads Radio Council

W. N. Macphail, of British Columbia Telephone Co.'s radio engineering department, was elected chairman of the Western Canada Telecommunications Council at it annual meeting on Mar. 28 in Vancouver.

He succeeds R. A. Marsh, of Lenkurt Electric Co. of Canada Ltd. The council represents large manufacturers and users of radio equipment in the western provinces, making co-ordinated representations to the Department of Transport on development and use of radio.

Council considerations include technical standards of equipment, assignment of frequencies, customs and duties regulations, and all matters relating to the planning of radio systems.

Columbia's 10th Utility Management Workshop Set

The 10th annual Columbia University Utility Management Workshop, to be held from July 23 to Aug. 4, at Arden House, Harriman, N. Y., has been announced by the university.

Prof. Robert T. Livingston of the Industrial & Management Engineering department of Columbia has, since 1952, conducted this two-week workshop at Arden House, for those he describes as the "managers of tomorrow," and on the subject of the "creative art of managing."

Thirty-six selected participants from nationwide and foreign utility companies will participate in the workshop. Nominations are being accepted through June on a first-come basis, the university states.

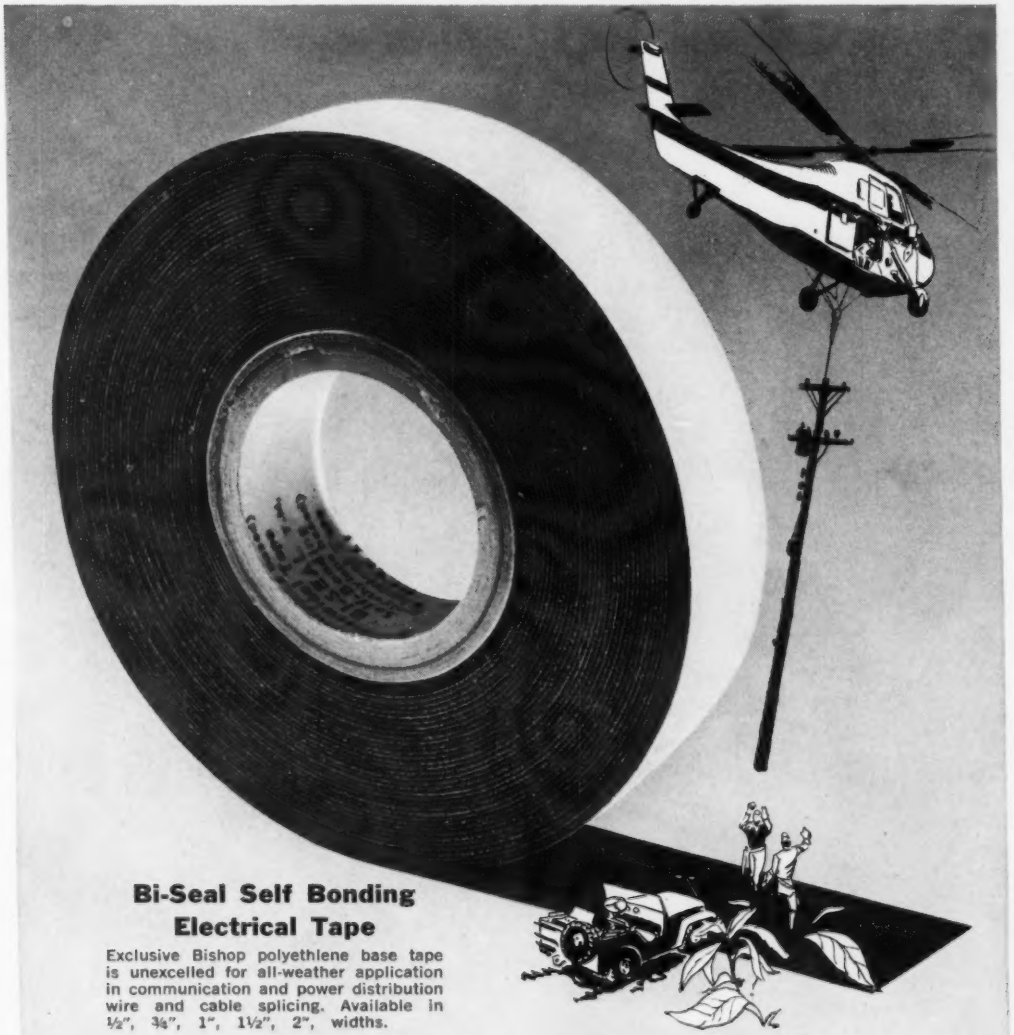
For further information, write Columbia Utility Management Workshop, Columbia University, 409 Engineering Bldg., New York 27, N. Y.; or telephone: UNiversity 5-4000, extension 2546.

In 1858, the first Atlantic Cables were insulated with Bishop Gutta Percha.

Today, Bishop answers industry's critical demands . . . from the tropics to polar regions.

This is the world of BISHOP ELECTRICAL INSULATION

114 years of continuous development and service has established Bishop as a leading producer in the electrical insulation field. Bishop's high standard is maintained in a comprehensive line of plastic and synthetic rubber tapes, epoxy compounds for cable splicing and special compounds for cable repair.



Bi-Seal Self Bonding Electrical Tape

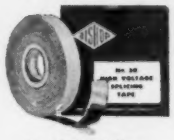
Exclusive Bishop polyethlene base tape is unexcelled for all-weather application in communication and power distribution wire and cable splicing. Available in ½", ¾", 1", 1½", 2", widths.

Superior corona and ozone resistance
Fuses into solid mass
Moisture, corrosion and chemical resistant
High dielectric strength
Superior aging and weathering
Long storage life

Write for catalog or specific data.

Other Bishop Tapes

No. 85 All-Climate Vinyl Electrical Tape



No. 30 High Voltage (Butyl) Splicing Tape

No. 125 Electrical (Butyl) Filler Tape

NEOFIL (Neoprene) Electrical Filler Tape

BI-PRENE (Neoprene) Electrical Jacketing Tape

VINYL ELECTRICAL TAPE No. 1 (.007") and No. 2 (.010")

RUBBER TAPE

BISHOP

Manufacturing Corporation, Cedar Grove, Essex County, N. J.

News on New Products

AUTOMATIC WEATHER-ANNOUNCER—The Automatic Weather-Announcer has been developed by the Automatic Electric Co. This new equipment gives a recorded weather forecast and commercial message to people calling its special number.

The Weather-Announcer can be set up so that the weather forecast message can be changed at any time, from a remote control unit miles away from the Weather-Announcer main unit (See photo).

Automatic Weather-Announcer developed by Automatic Electric Co. gives recorded weather report and "spot commercials." Remote control unit (at left) permits changing weather recording from distant point. Recorder top and bottom sections can be seen in photo on right.

The magnetic drum recorder (top section) can be used for any length message up to four minutes. When the weather report is shorter than four minutes, the pickup head automatically resets to the starting point after the message ends, so there is no "dead" period of quiet.

A drum-mounted loop recorder (bottom section) has a capacity of six messages, each six seconds in length. These "spot commercials" can bring in substantial revenue from advertisers, or may be used for public service announcements by the telephone companies.

The caller hears the commercial message first, and then receives the weather forecast. One commercial is heard with each weather report, and the six messages are heard in order, in each six-call cycle. Automatic Electric states that its Automatic Weather-Announcer can be equipped to handle up to 500 calls simultaneously.

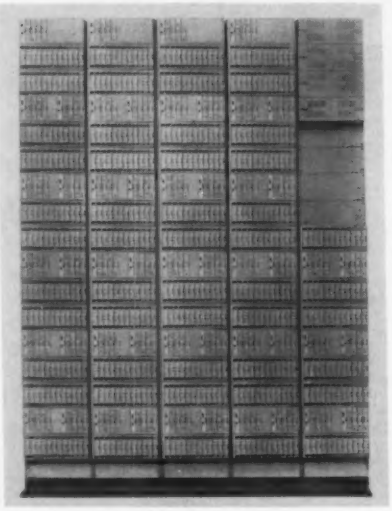
Both magnetic recorders feed into a 10-watt, 4-ohm impedance audio amplifier. The amplifier is used for both record and playback. Capacitor-induction motors drive the recorder mechanisms. The complete unit is operated on 115 volts, 60 cycle ac and 48 volts dc.

The Automatic Weather-Announcer is 80 inches in height, 22 inches wide, and 20 inches deep. Request NP1597.

•

TRANSISTORIZED MICROWAVE CARRIER—A completely transistorized microwave carrier system has been introduced by the Texas Division of Collins Radio Co.

Designated the Collins MX-106 Microwave Carrier System, the company states it provides maximum reliability and efficiency for multi-channel communication, yet requires only one-fifth the rack space and consumes only one-eighth the power of similar tube equipment. The system handles 600 voice channels whose quality meets or exceeds toll circuit requirements. An initial low channel density system can be expanded easily and economically at any time, Collins points out.



Collins Radio Co. 600-channel transistorized carrier terminal.

The MX-106 uses the frequency division principle with single sideband, suppressed carrier techniques. Collins says frequency allocations, sideband allotment, and carrier levels are compatible with Collins MX-103 Carrier, Western Electric L-Type Carrier, CCITT

(Continued on page 68)

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP1597_____; NP1598_____; NP1599_____; NP1600_____;
NP1601_____; NP1602_____; NP1603_____; NP1604_____;
NP1605_____; NP1606_____; NP1607_____; NP1608_____;
NP1609_____; NP1610_____; NP1611_____; NP1612_____;
NP1613_____; NP1614_____.

Name.....

Company.....

Street.....

Town and State.....

4/22/61

Frustrated?

Getting inadequate compensation for the use of your facilities in handling toll messages? Better look into USITA!

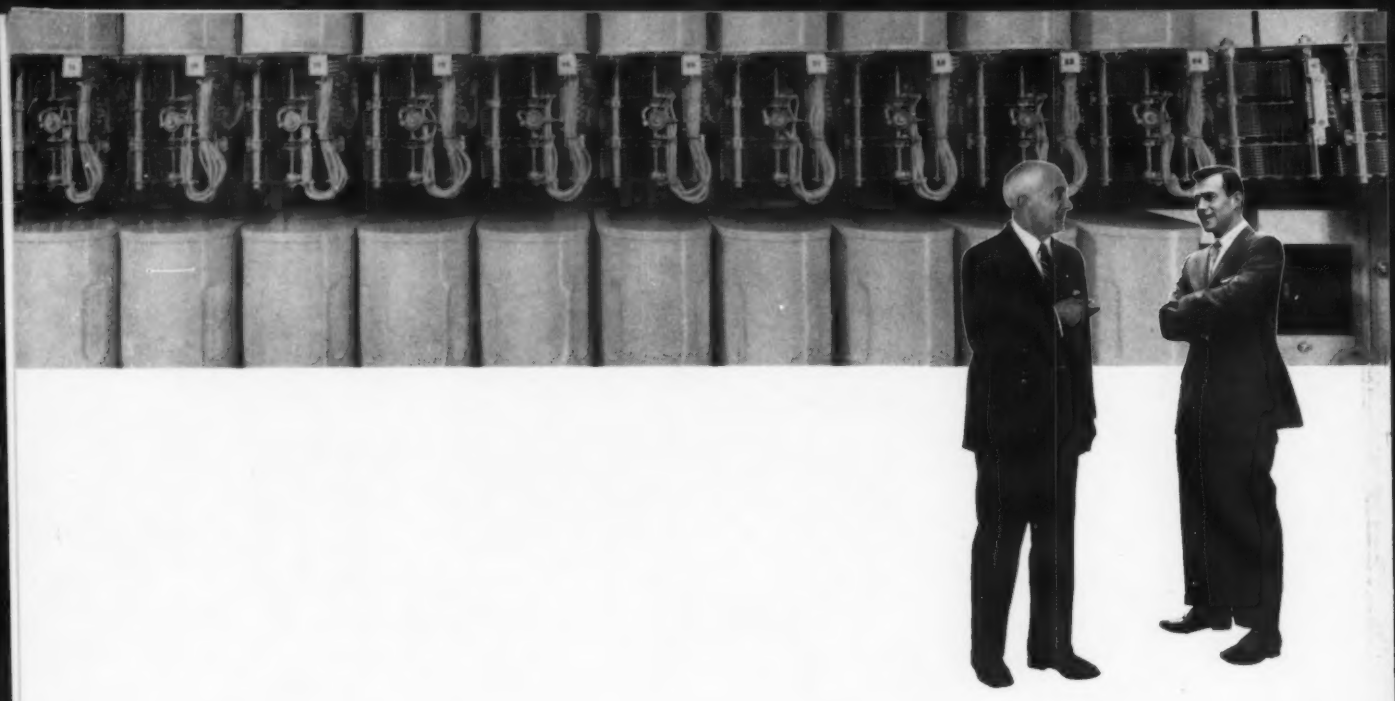
→ Why? USITA is a single unified force serving its members' interests in toll compensation negotiations.

→ There are many other membership benefits. You have full-time representation in the highest councils of the Nation. There is a constant flow of accurate, timely information on technical and financial matters as well as interpretation of regulations and trends. USITA is the keystone of Independent telephony—the force upon which Independent telephone companies depend for things they cannot do by themselves.

→ By belonging, you have the strength of a multi-billion dollar industry behind you!

→ Annual membership dues are nominal (and they are tax deductible). Joining is easier than you may imagine. For details, just telephone the Association's Washington offices COLLECT (National 8-6512) or write: United States Independent Telephone Association, 438 Pennsylvania Bldg., Washington 4, D. C.

USITA keystone of independent telephony



"No wonder they're pleased,

it's so easy to expand with Strowger"

Keeping up with future growth is a vital point in choosing dial equipment. That's why Keith Regel* always shows a customer how easy it is to expand with Strowger. Keith explains that Strowger is assembled in small, self-contained units. Here's what that means to the telephone company...

By simply adding units, you meet increasing traffic with minimum effort and expense. Handy extra banks take care of moderate growth—you simply jack-in another switch. For larger expansion, you just slip pre-wired shelves in place and connect a cable.

Are you planning a dial conversion? Then get in touch with us. We'll send *your* AE representative in to help you solve your dial conversion problems. He can give you the complete Strowger story. And, he can provide you with information on how to finance Strowger dial equipment. To contact your AE representative, just write Automatic Electric Sales Corporation, Northlake, Illinois. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.

**District Manager, Western District, Automatic Electric Sales Corporation*

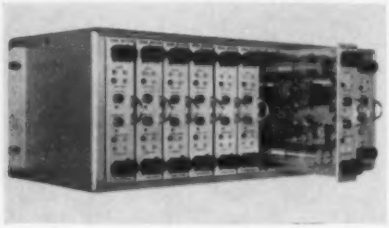
AUTOMATIC ELECTRIC

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

and others. To achieve maximum channel density, multiple modulation techniques are used to form a composite baseband signal for transmission by broadband transmitting equipment.



Card cage containing 12-channel MX-106 base group.

According to the company, all active MX-106 components affecting the signal path are semiconductors, which operate well below their maximum ratings for long, trouble-free service. Conservatively designed, printed wiring circuits and a minimum of transistor types contribute to ease of maintenance. For sideband and frequency selection, the system uses Collins Mechanical Filters. These have essentially flat bandpass characteristics with excellent skirt selectivity, giving long-term stability with no adjustments necessary.

All MX-106 circuits are printed on card modems that plug into special rack-mounted card cages, 12 modems to the cage. Card size is approximately 1¾ by 6 by 9 inches, and the card cage occupies approximately 7 inches of rack space in a standard 19-inch relay rack. For 24 channel modems and base group modulators, rack space required is 21 inches.

Standby features of the system include 100 per cent backup of any equipment common to 12 or more channels. Sensing of standby equipment is provided, the company states.

Pilot tones provide a reference for synchronization, level regulation, sensing and alarm.

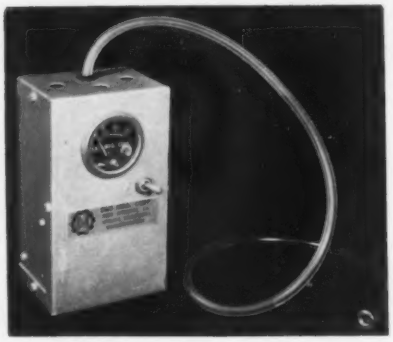
The company says it is offering complete microwave-carrier systems capabilities. Services include conducting path surveys; systems engineering; construction of buildings, access roads and towers; equipment installation, operation and maintenance, and technical training. Request NP1598.

•

CABLE REEL PRESSURE ALARM—S & G Mfg. Corp. now lists as part no. 8279 a new cable reel pressure alarm to be used where telephone cables are plowed in under air pressure. This alarm is said to give assurance that the cable is under protection as it is being plowed in place.

Should the cable sheath be damaged in the process of plowing, the cable reel pressure alarm will indicate, S & G reports, when the air pressure is released causing the contact to make and ring the alarm signal. When the alarm comes in, the plowing can be stopped and the cable dug up behind the plow until the leak is located and repaired. After proper repairing of the cable leak, the alarm can be reset and plowing can be resumed.

In addition to plowed in cable application, the cable reel pressure alarm can also be used, it is stated, for pulling cables in duct runs.



Cables received not under pressure can be plugged and valves installed for receiving air pressure. When the cable reel pressure alarm is hooked up, plowing can begin. Request NP1599.

•

PRESS-TO-TALK MICROPHONE—A press-to-talk microphone unit has been introduced by Raytheon Co.'s Distributor Products Division. The company says it was designed for operation, even under the severe conditions encountered

with mobile and marine radio-telephone equipment. Named the "Elucidator," the unit is molded of high impact plastic described by Raytheon as "practically indestructible."

Employing a standard F1 type carbon button, by-passed for RF, the Raytheon "Elucidator" is said to provide excellent intelligibility within the voice range. The company states that frequencies below 200 and above 4,000 cycles per second are attenuated to taper the spectrum and accommodate the restricted bandwidth requirements of most modern communications equipment.

With a nominal impedance of 35 ohms, the semi-directional unit operates on DC microphone currents ranging from 15 to 120 milliamperes. This microphone is designed as a replacement unit for use with mobile, marine, citizens band and amateur radio transmitters and P.A. systems, tape recorders and intercom equipment.

In "bankers' gray," the microphone is smoothly hand-contoured. The retractable, 11-inch to 60-inch coiled cord is a light gray.

Request NP1600.

•

ELBOW—Bucket access from the floor of the body is an exclusive feature of the LD-40 Elbow, states its manufacturer, the Holan Corp.

The new elbow reaches to a working height of 40 feet and can be operated by one man. Holan points out it is ideal for mid-span trouble work, and telephone drop installations from mid-span, among other uses.

In addition to the easy-entry bucket which rests on the floor of the body, the LD-40 elbow incorporates several features which insure stability and maximum range without the use of outriggers, the company states. Using the same reverse offset superstructure and torsion bars designed for the Holan Squirt Boom which was introduced earlier this year, the LD-40 provides a firm and stable aerial nest in all positions. It can be mounted on an 84-inch CA, 14,000-pound G.V.W. chassis.

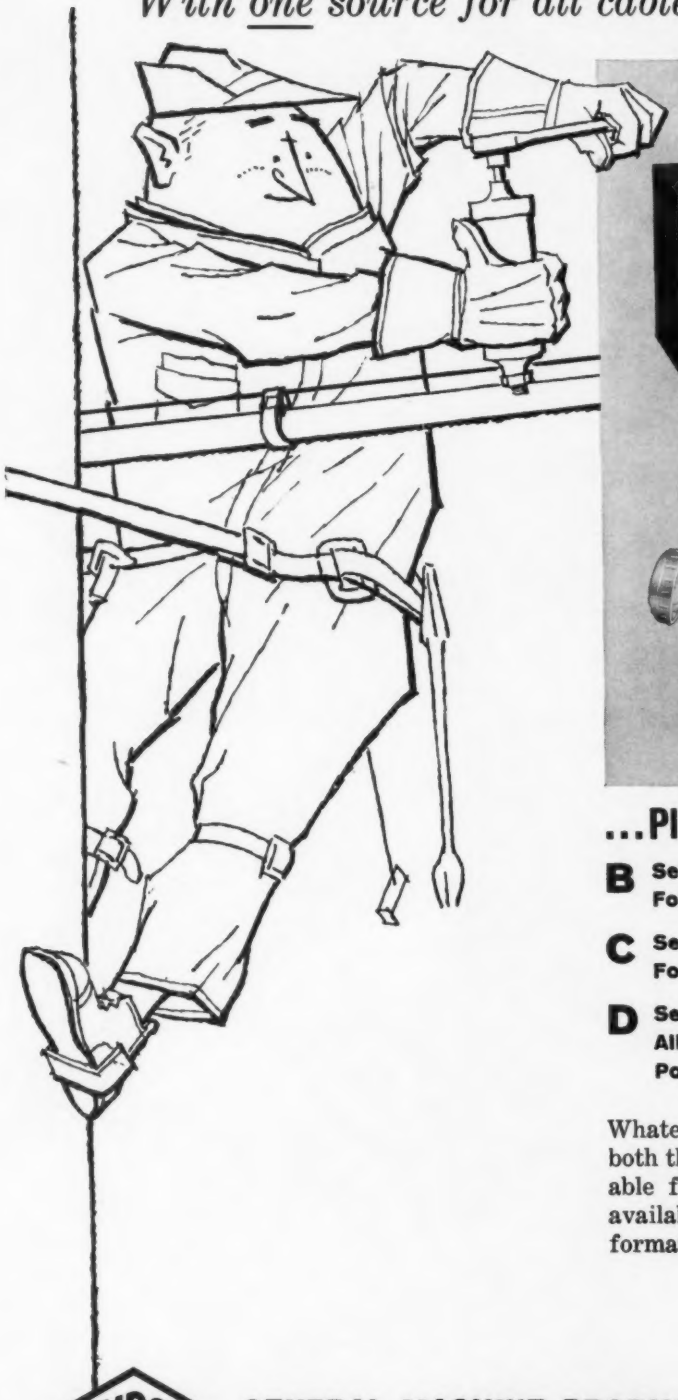
The metered remote controls are

(Continued on page 72)

With GMPCo *it's easy as B, C, D,*

PICK THE PLUG AND THE PACKAGE

With <u>one</u> source for all cable sealing compounds

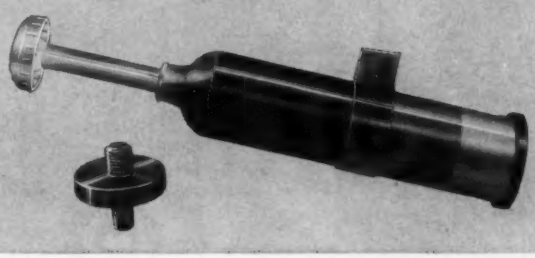


PICK THE PACKAGE...

Packaged in Can with Activator,

OR...

Prepackaged in disposable plastic Semkit.
Nozzle available for Semkit.



...PICK THE PLUGGING COMPOUND

B **Sealing Compound #G7751**
For Polyethylene Cable

C **Sealing Compound #G7947**
For Lead Cables

D **Sealing Compound #G7837**
All Purpose Compound for
Polyethylene and Lead Cable

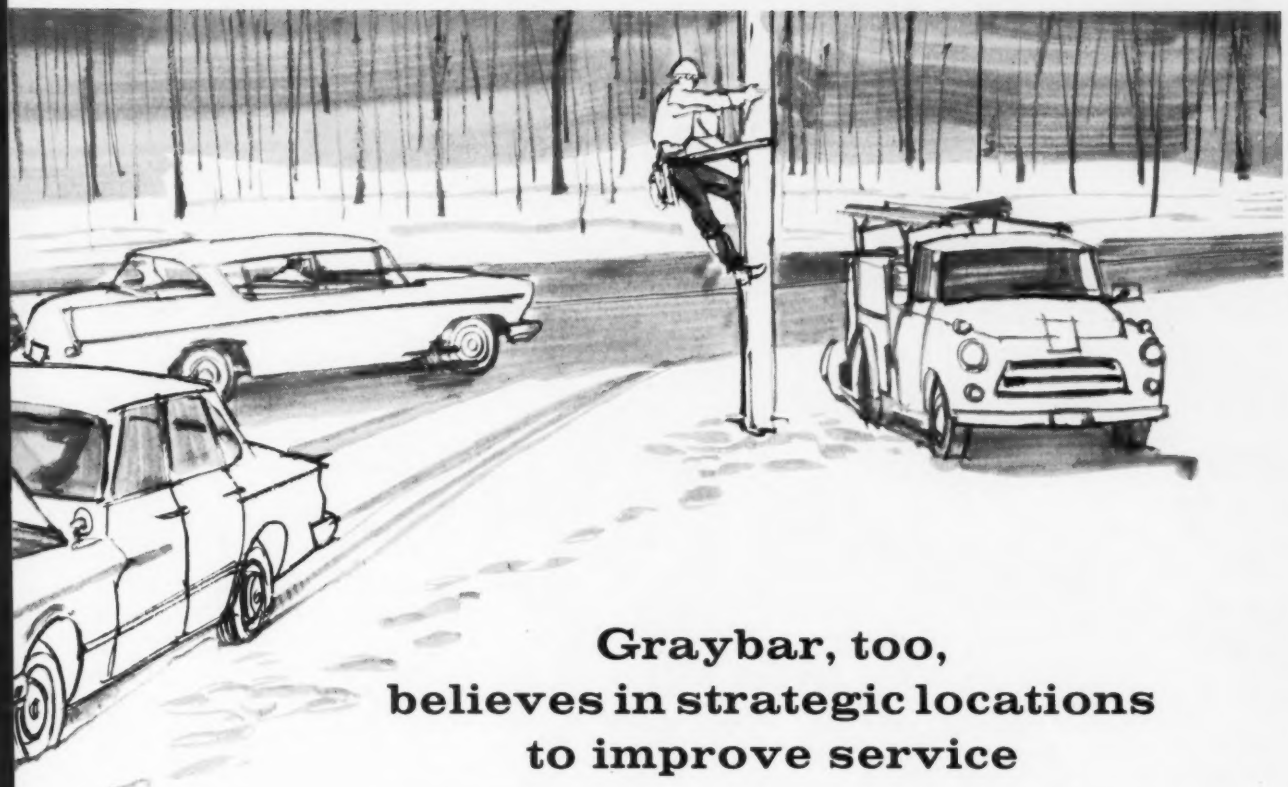
Whatever your cable plugging problems, you'll find both the compound and the package you prefer available from General Machine Products. Compounds available in regular and large unit sizes. For full information address your inquiries to the address below.

GMPCo **GENERAL MACHINE PRODUCTS COMPANY, INC.**

Old Lincoln Highway At Turnpike, Trevose, Penna.

Distributed by GraybaR

HONE
TELEPHONE



Graybar, too, believes in strategic locations to improve service

Strategic locations can be vital . . . whether for the trouble-plagued traveler . . . or for those emergencies when a telephone company needs immediate delivery of close-at-hand equipment.

Providing independent telephone companies with what they need *when* they need it, is one reason Graybar maintains over 130 strategically-located warehouses across the nation — all stocked with essential materials and equipment. And Graybar is the *only* independent distributor serving independent telephone companies coast-to-coast.

From these locations you can obtain *everything* you require. You also get that extra measure of genuinely personal service that comes from an *independent* company . . . a company operated by the people who built it, own it, and want to increase its value to customers.

Next time, call in your Graybar man. He is *strategically* near-at-hand; always eager to serve you personally. 995

The only independent distributor serving you coast-to-coast

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ELECTRIC COMPANY, INC.

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Everything Electrical GraybaR

The Galvanized Steel Strand with the built-in raincoat

Everybody talks about the weather . . . CF&I *does* something about it. To protect Galvanized Steel Strand against corrosion, CF&I builds in a zinc coating that shrugs off moisture. The result is a long-lasting, weather-resistant steel strand that is ideal for messenger wire applications.

Also highly suitable for guying assignments, CF&I Galvanized Steel Strand is made in seven- or three-wire constructions . . . in accordance with ASTM specification A-122. In addition, it can be tailor made to meet your particular specifications.

Like all CF&I products, Galvanized Steel Strand is made by a nation-wide company to meet high American standards. For immediate delivery, contact your nearby CF&I sales office. 6132-B

THE COLORADO FUEL AND IRON CORPORATION
Denver • Oakland • New York
Sales offices in All Key Cities

located on the inboard edge of the bucket and the slave and main controls on the superstructure. According to Holan, the bucket is suspended in an offset yoke (patents applied for) to facilitate bucket entry, increase versatility and working range, and provide a lower stored height (10 feet).

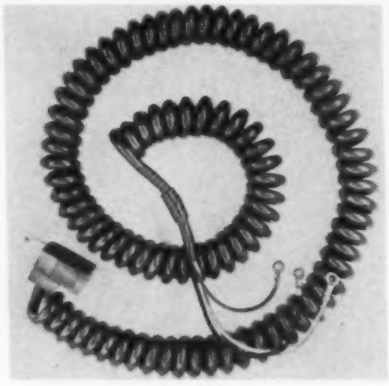
The lower arm of the LD-40 travels 102°, the upper arm 135° and the unit carries a payload of 300 pounds in all positions. The LD-40 rotates 360° continuously in either direction and is self-locking.

A triple-cylinder-type hydraulic parallelogram system keeps the bucket level at all times. The molded Fiberglas reinforced plastic bucket, yoke and upper arm can withstand a bucket-to-ground test in excess of 100,000 volts (A.C.). Request NP1601.

•

COILED CORDS, COMPONENTS—The addition of retractile coiled cords to its line of vinyl cord sets and components has been announced by Miller Electric Co.

These coiled cords are available alone or with strain reliefs, special plugs, connectors and other components molded-on for communication, power supply and other applications. A wide choice of colors and styles is available.



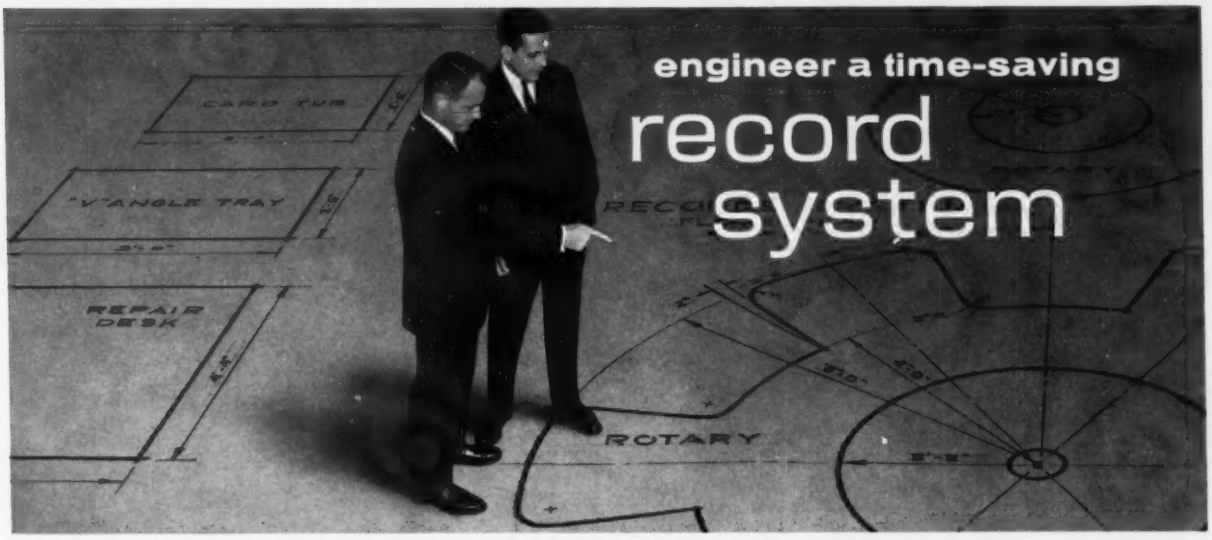
Where appropriate, custom-engineered or stock components comply with UL, CSA, Bureau of Ships, Signal Corps and other standards. Request NP-1602.

•

ADHESIVE-BACKED ASBESTOS TAPE—Asbestos tape with a pressure sensitive adhesive backing is now available from Johns-Manville. Called Besto-Tak, the new product is said to offer advantages in industrial applications where asbestos tape is needed for assembly purposes. The adhesive holds the tape in place while parts are being positioned or covers applied.

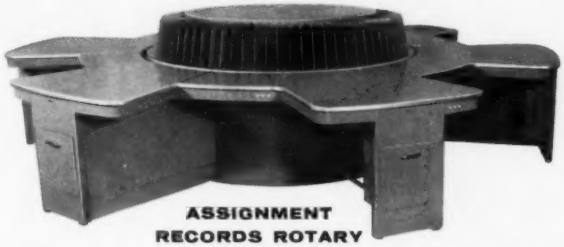
Johns-Manville states that Besto-Tak is available for services up to 500F in

whatever your department call ACME VISIBLE to



Please note that important word **"system."** Your man from Acme is a systems engineer, thoroughly trained to analyze the record systems in every telephone company department. His objective: **speed up service and reduce cost of operation** by untangling the snags in the flow of your paper work. Ask your nearby Acme representative to help you engineer a time-saving system. It will include the correct equipment, record forms or supplies you need.

TYPICAL ACME EQUIPMENT



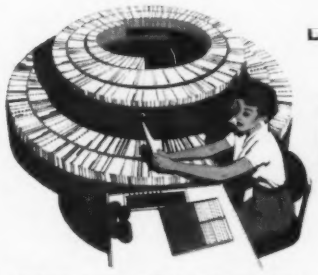
ASSIGNMENT RECORDS ROTARY

New Acme Visible push button Rotaries speed selection of 100 books to the user at the touch of a button. From 1 to 12 or more workers can use one set of records without moving from their desks.

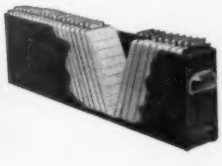
ACME VISIBLE

ACME VISIBLE RECORDS, Inc. Crozet, Virginia

LINE CARD RECORDS



Modern Acme Visible Rotary gives 1, 6, 12 or more users instant access to as many as 250,000 records.



New V-Angle Trays with "measured space control" flips open to any card. Stays open . . . leaves hands free for copying.

Movable Line Card Tubs in many sizes. Variable partitioning allows for possible changes in line card dimensions.

TYPICAL ACME SYSTEMS

ACCOUNTING
- Toll Ticket Sorting
- Pay Roll Deductions
- Computed Mileage Rate Charts
- Employee Service Records
- Federal Income and F.I.C.A. Tax Tables
- Fractional Charge and Allowance Tables
- Wage Computation Tables

COMMERCIAL
- Service Representatives Handbook
- Classified Advertising Control
- Mileage & Facilities Record

ENGINEERING
- Cross-Index to Correspondence
- Map Desk Assembly
- Photo Panels
- Project Record
- Record of Estimates
- State of Construction Projects

PLANT
- Cable and Terminal Records
- Left-In-Equipment Records
- Line Card Filing
- Service Order Dispatching
- Parts Index and Bin Location
- Circuit Layout Records

PERSONNEL
- Seniority Listings
- Tour of Duty Roster
- Vacation Schedule
- And Many Others

MAINTENANCE
- Weekly Routines
- Monthly Routines
- Annual Routines

TRAFFIC
- Toll Ticket Sorting
- Central Information Listing
- Flexoline Keyshelf Units
- Force Adjustment
- Multi-Card Bulletin Holders
- Negative Intercept Records
- Photo Panels
- Underglass Bulletin Holders

AND MANY OTHERS

AMCHEM, the makers of Weedone, can solve your brush problem...*whatever it is*

LINE CLEARANCE

Turn brush-choked utility rights-of-way into brush-free areas quickly and economically with WEEDONE/WEEDAR brush control chemicals. Also now available—complete brush control programs through new "dormant cane broadcast spraying" techniques.

ROADSIDE CLEARANCE

New AMIZINE Weed Killers and AMIZOL combinations provide complete vegetation control along thousands of miles of roadsides, center strips, embankments, guard rails, etc.

RIGHT-OF-WAY CLEARANCE

Specialized Amchem techniques using WEEDONE/WEEDAR chemicals and AMIZINE/AMIZOL combinations provide high control, low cost chemical brush eradication programs for railroads.

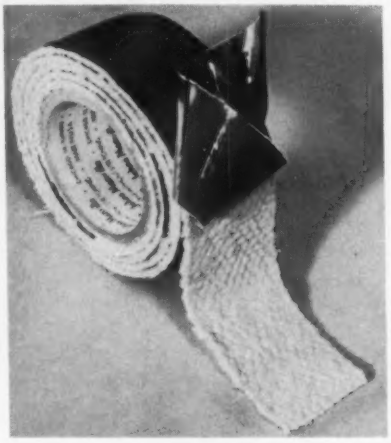
AMCHEM PRODUCTS, INC.

Amchem, Weedone, Weedar and Amizol are registered trademarks of **AMCHEM PRODUCTS, INC.** (Formerly American Chemical Paint Co.)
AMBLER, PA. • Niles, Calif. • St. Joseph, Mo.

AMCHEM PRODUCTS, INC., Ambler, Pa.
Please send me copies of your "Brush Control" brochure and full information on the uses of Weedone Brush Killers.

Name_____ Title_____
Company_____
Address_____
City_____ Zone_____ State_____

commercial grades, and up to 900F in other grades. Its use in an unsupported structure, the company says, is limited to 275F, the point at which the adhesive begins to lose strength.



The new tape is available in thicknesses of .022, 1/32, 1/16, and 1/8-inch; and in widths from 3/8 to 6-inch. Tapes under 1/16-inch thick are supplied in 50-foot rolls; others in 25-foot rolls. The thickness is indicated as the nominal thickness of the tape, exclusive of adhesive. Request NP1603.

•

PORTABLE TEST SET — General Electric's communication products department has introduced a portable test set which is said to improve the testing of mobile radio units because of the variety of functions it can perform.

Called "Porto-Lab," the set has been built to General Electric's specifications, G-E states, by Polytronic Research, Inc. Among new functions designed to save two-way radio technicians time are a transistor checker, a 100 watt dummy load and a 1,000 cycle test oscillator.

The transistor checker can be used for both tetrodes and triodes, for PNP's and NPN's.

The dummy load has a 50 ohm termination for the transmitter and accepts 52 watts continuously or 100 watts for 30 second periods.

The test oscillator may be used, it is reported, for modulation setting or signal tracing. It has a calibrated output of 1 volt and ½ volt.

Modularly constructed for maximum flexibility, Porto-Lab is said to permit easy adaptation to mobile radio equipment currently marketed, regardless of manufacturer.

Among other features mentioned by G-E are a universal dummy control head; a field strength indicator; a peaking generator for receiver alignment with provisions for 10 crystals, a

basic multimeter with center reading meter for discriminator checks, and a meter polarity reversal switch.

The equipment is available through G-E's mobile radio product service headquarters. Request NP1604.

•

TRANSISTORIZED MICROWAVE PACKAGE—Motorola has developed a transistorized microwave package which includes new RF, multiplex, telegraph carrier and alarm equipment, called the 50 Series. RF equipment is designated MR-50; the multiplex is MC-50; telegraph carrier is MT-50; and the alarm system is MA-50.

Transistorization of all stages, except the RF transmitter klystron, marks a revolutionary step in the field of microwave, said Motorola microwave marketing manager Richard G. Jones.

Operating in the 6,000 mc region, the new equipments are designed for use by utilities, railroads, industry and government, according to Mr. Jones.

All four equipments in the new package incorporate modular construction and etched circuit cards for ease in servicing. Pull out drawers enable "in service" maintenance from the front of the racks (see photo).

The equipments can be operated from either ac or dc power sources. Motorola states solid state components are utilized for reliability. Request NP1605.

•

BACKFILL BLADE—Operating under the philosophy that digging the ditch was only half the job, Davis Mfg. Co., manufacturer of the T-66 trencher, reports it has developed a companion backfill blade so that one machine and

BUILT-IN BALANCE

WITH ALPHADUCT REINFORCED DROP WIRE

Balanced breaking strength of the conductors—400 pounds plus, with #18 AWG, 30% copperweld. Adhesion of the insulation—strong enough to prevent slipping at maximum load without physical or electrical failure. Neoprene jacket—tough, abrasion and weather resistant with enough "beef" to prevent buckling at the "P" clamps all the way up to maximum conductor strength. Compression cutting resistance—no break-down in "P" clamps up to overall breaking strength of the conductors. This sturdy balanced construction resists deformation and provides greater protection against lightning failures. This combination of exclusive Alphaduct features assures you of built-in balance for more years of trouble-free service and lower initial installation costs.*

National Distributors: Automatic Electric Sales Corporation, Northlake, Illinois; Leich Sales Corporation, 427W. Randolph Street, Chicago, Illinois.

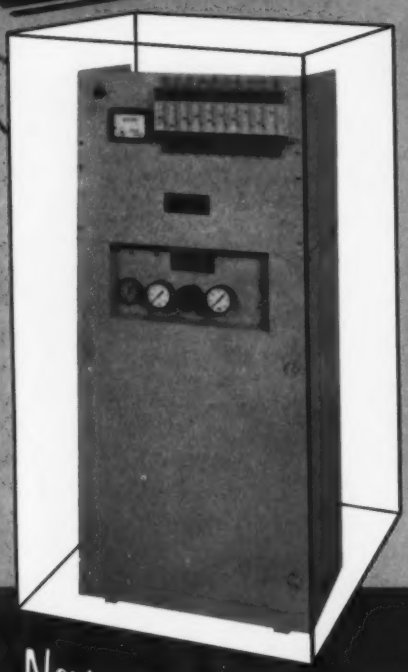
ALPHADUCT
WIRE AND CABLE CO.
NEW BRUNSWICK, N. J.

Regional Distributors: Buckeye Telephone & Supply Co., Columbus Ohio; The Lindsay Telephone Supply Co., Cleveland, Ohio; Pankey Supply Co., Charlottesville Va.

*It's dated for comparison.

Now...

A PUREGAS PACKAGED* PRESSURE SOURCE



*Available with factory mounted meter panel, 29" x 19" x 12".
Without meter panel, 43" x 19" x 12".

REA approved.

THE New MODEL 600 AIR DRYER

● Versatile ● Easy to install ● Maintenance free

This latest addition to the Puregas line of dependable pressurization equipment is the specific answer to the industry's need for a compact, economical air dryer to pressurize the limited cable plant of small telephone exchanges, CDO's, repeater and toll cable stations and railroads. Furnished with or without an integrally mounted and internally piped meter panel, the Model 600 is uniquely designed for easy installation on wall or floor . . . and comes perfectly packaged to meet the most minimal space requirements.

Fully automatic, the Model 600 delivers 600 standard cubic feet of dry air per day to the cable system.

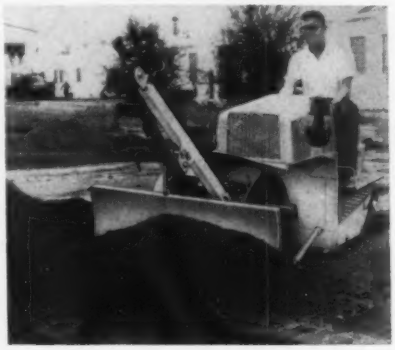
An oilless air compressor coupled with dependable refrigeration air drying makes the Puregas Model 600 a pressure source that offers long service life and practically maintenance free operation.

For detailed data and descriptive literature, send for Bulletin 230 — or the complete Puregas Cable Pressurizing Equipment Catalog.

PEC PUREGAS EQUIPMENT CORP.
578 Oak Street, Copiague, L. I., N. Y.

one man can handle the job—from initial cut to backfilling.

The T-66 was designed to accommodate this versatility. Maneuverability, a key factor in backfilling, is obtained, the company says, through an instant forward/reverse drive. This lets the operator change directions of travel instantly. Steering maneuverability is provided by independent left and right disc steering brakes—much the same as utilized by large crawler tractors.



The 42-inch backfill blade attaches directly to the digging boom which is hydraulically controlled. This, Davis states, enables the operator to raise and lower the blade as desired. It can be set straight or angled to the left for parallel backfilling.

Instant forward/reverse is obtained by hydraulics which power a two-speed gear reduction unit. By reversing the flow of hydraulic oil with a hand lever, the Davis T-66 is reported to immediately change its direction of travel.

Maximum backfilling efficiency is claimed because the T-66 has maximum traction (through the use of tracks and proper balance of its 1,400-pound weight) as well as high-flotation with 3.6 pounds ground pressure per square inch.

As a trencher it digs from 4 inches wide, 66 inches deep to 12 inches wide, 30 inches deep and at varying widths and depths in between. Request NP-1606.

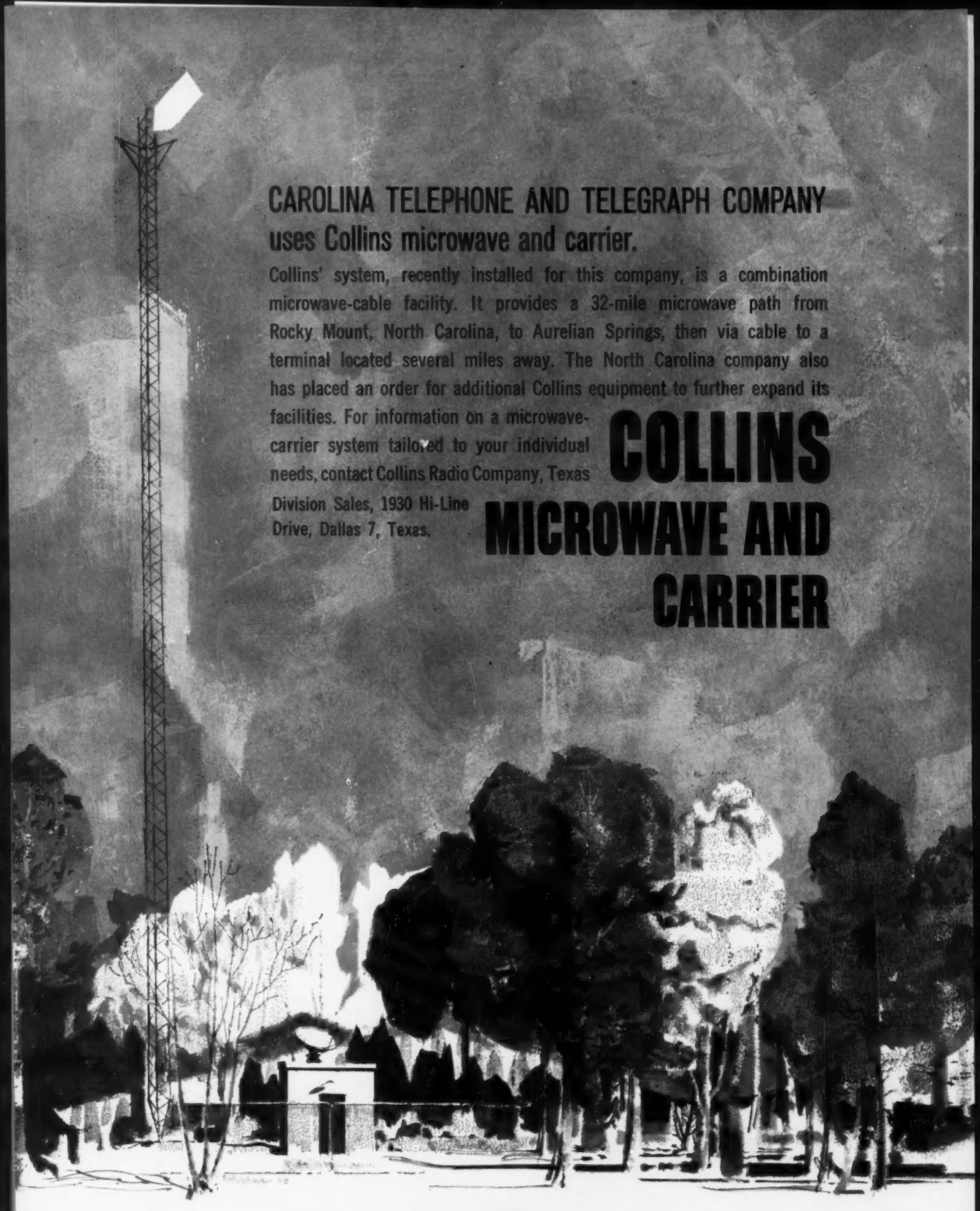
•

WIRE PULLER—Jet Line Products, Inc., has introduced its new Jet Line Wire Puller, with which, it says, one man can do the work of six men pulling by hand.

One feature of the new wire puller is that the rope (or cable) is not stored on the pulling drum. Instead the drum automatically takes up, then pays off the rope—thus permitting runs of any distance, the company states.

This feature also means constant pulling power, Jet Line points out, be-

(Continued on page 80)



CAROLINA TELEPHONE AND TELEGRAPH COMPANY uses Collins microwave and carrier.

Collins' system, recently installed for this company, is a combination microwave-cable facility. It provides a 32-mile microwave path from Rocky Mount, North Carolina, to Aurelian Springs, then via cable to a terminal located several miles away. The North Carolina company also has placed an order for additional Collins equipment to further expand its facilities. For information on a microwave-carrier system tailored to your individual needs, contact Collins Radio Company, Texas Division Sales, 1930 Hi-Line Drive, Dallas 7, Texas.

COLLINS MICROWAVE AND CARRIER

COLLINS

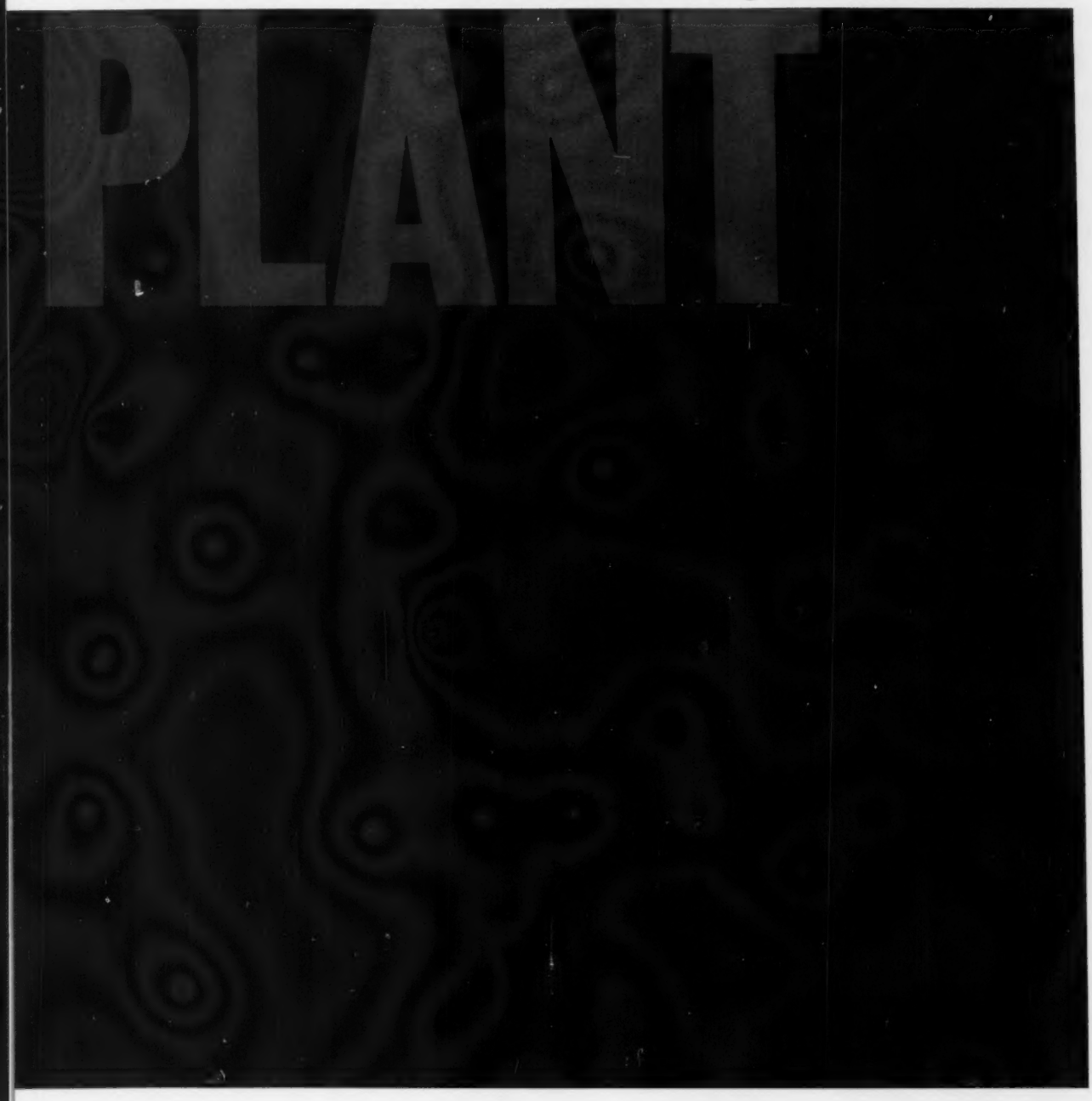
COLLINS RADIO COMPANY • DALLAS, TEXAS • CEDAR RAPIDS, IOWA • BURBANK, CALIFORNIA

BURIED

Get top quality... and industry's largest selection of wires and cables for direct earth burial—from General Cable. Bury it—and forget it! General Cable Corporation, 730 Third Avenue, New York 17, New York. Available nationally from Automatic Electric Sales Corp., Northlake, Illinois and Leich Sales Corp., 427 West Randolph St., Chicago 6, Illinois.

ds QUALPETH-ALPETH ▪ STALPETH ▪ Protective covers available: steel tape armor ▪ gopher tape armor ▪ wire armors ▪ ALPHADUCT distribution and buried entrance wire ▪ INDIANA terminal housings.

GCC
GENERAL CABLE CORPORATION



NUMBER 17 - *Toll Grade. Has about the longest leakage path possible with a single petticoat. For exchange circuits and lines not exceeding ten miles.*

HEMINGRAY INSULATORS

Easily and Economically Installed

Hemingray Glass Insulators stand up under severe conditions, do not deteriorate, provide the service you need to assure continuous operation of communication lines. The dependability of Hemingray Insulators as proved by their years of sturdy performance is one of the reasons behind their world-wide acceptance.

Hemingray has pioneered many insulator developments to keep pace with requirements, improve communication systems, assure you a dependable source of supply.

The immediate availability of these insulators is further assurance of Hemingray dependability. An up to date distribution system makes Hemingray Insulators available when you want them and where you need them.

Hemingray Glass Insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

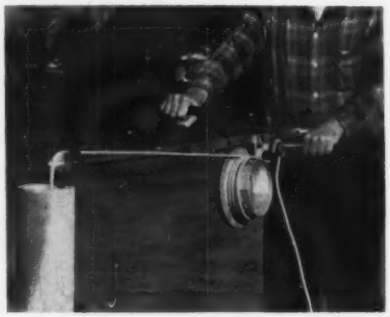
There's a Hemingray Insulator to meet every communication line requirement.

World standard for quality Since 1870

HEMINGRAY INSULATORS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

cause with no build-up of stored cable on the drum, there's no loss of power. The Jet Line Wire Puller delivers a constant 20-to-1 power ratio throughout the entire pull.

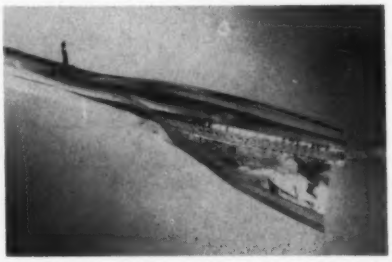


Wire pulling is safer, too, with a Jet Line Wire Puller, according to the company. It's designed for use with nonconductive Jet Line Poly Rope, so there's less danger when working "hot" areas. It eliminates dangerous hand pulling on ladders and scaffolds—and its light weight (12 pounds) makes it easy to handle even in confined areas, the company points out.

The Jet Line Wire Puller works in any type conduit: metal, including aluminum, plastic and fibre. The company states it grips on the pipe, so the pull can be started anywhere along the run. Also, it can be used with 5/32-inch through 3/8-inch Jet Line Poly Rope, according to the cable strength required. Request NP1607.

•

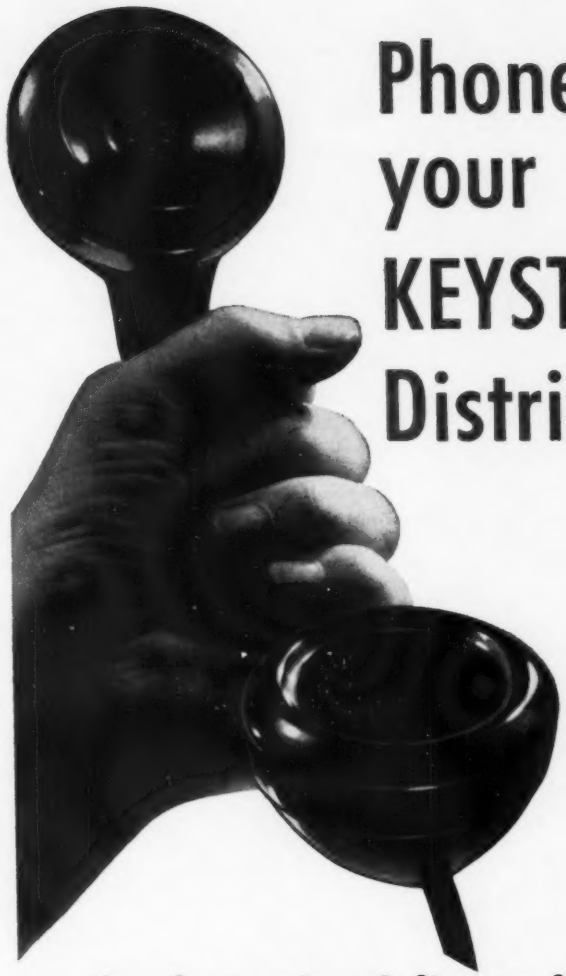
ALUMINUM-SHIELDED ZIPPERED CONDUIT—A new type SH shielded Zippertubing with 1 mil aluminum foil laminated to vinyl impregnated glass cloth is announced by The Zippertubing Co. to help solve transient RF interference problems. This shielded Zippertubing has already been tested, the



company states, on cables in the Hound Dog missile, the Mounting Pylon and the B-52 wing, and is said to have proved "extremely satisfactory."

The edge of the aluminum shielding of the SH Zippertubing has aluminum braid, which facilitates grounding, and assures positive contact and coverage of the entire circumference.

The Zippertubing company describes



Phone your KEYSTONE Distributor

British Ropes Canadian Fact., Ltd.
Vancouver, B. C., Canada

Crescent Electric Supply Company
Burlington, Iowa
Dubuque, Iowa
Cedar Rapids, Iowa
Davenport, Iowa
Madison, Wisconsin
Mason City, Iowa
Ottumwa, Iowa
Peoria, Illinois
Quincy, Illinois
Rapid City, South Dakota
Sioux City, Iowa
Sioux Falls, South Dakota
Spencer, Iowa
Sterling, Illinois
Waterloo, Iowa

Dakota Electric Supply Co.
Fargo, North Dakota

Joslyn Mfg. and Supply Co.
Birmingham, Alabama
Chicago, Illinois
Dallas, Texas
New Orleans, Louisiana
New York, New York
No. Kansas City, Missouri
Oklahoma City, Oklahoma
Omaha, Nebraska
St. Paul, Minnesota

Kingsport Electric Co., Inc.
Kingsport, Tennessee

Line Material Industries
Milwaukee 1, Wisconsin

Marshall-Wells Canadian Companies, Ltd.
Winnipeg, Manitoba, Canada

The Mine & Smelter Supply Co.
Salt Lake City, Utah

Nelson Electric Supply Co.
Dallas, Texas
Lubbock, Texas

Jack Pruzan Co.
Seattle, Washington

Southern Electrical Corp.
Chattanooga, Tennessee

Suttle Equipment Company
Chicago, Illinois
Lawrenceville, Illinois

Tele-Wire Supply Co., Inc.
Jamaica, New York

Tennessee Valley Electric Supply Co.
Nashville, Tennessee
Memphis, Tennessee
Little Rock, Arkansas

Wheeler Lumber Bridge & Supply Co.
Norfolk, Nebraska

. . . for fast wire delivery from stock

When wire is needed, call your Keystone Wire Distributor. His stocks are well supplied. He can give you prompt delivery in any emergency.

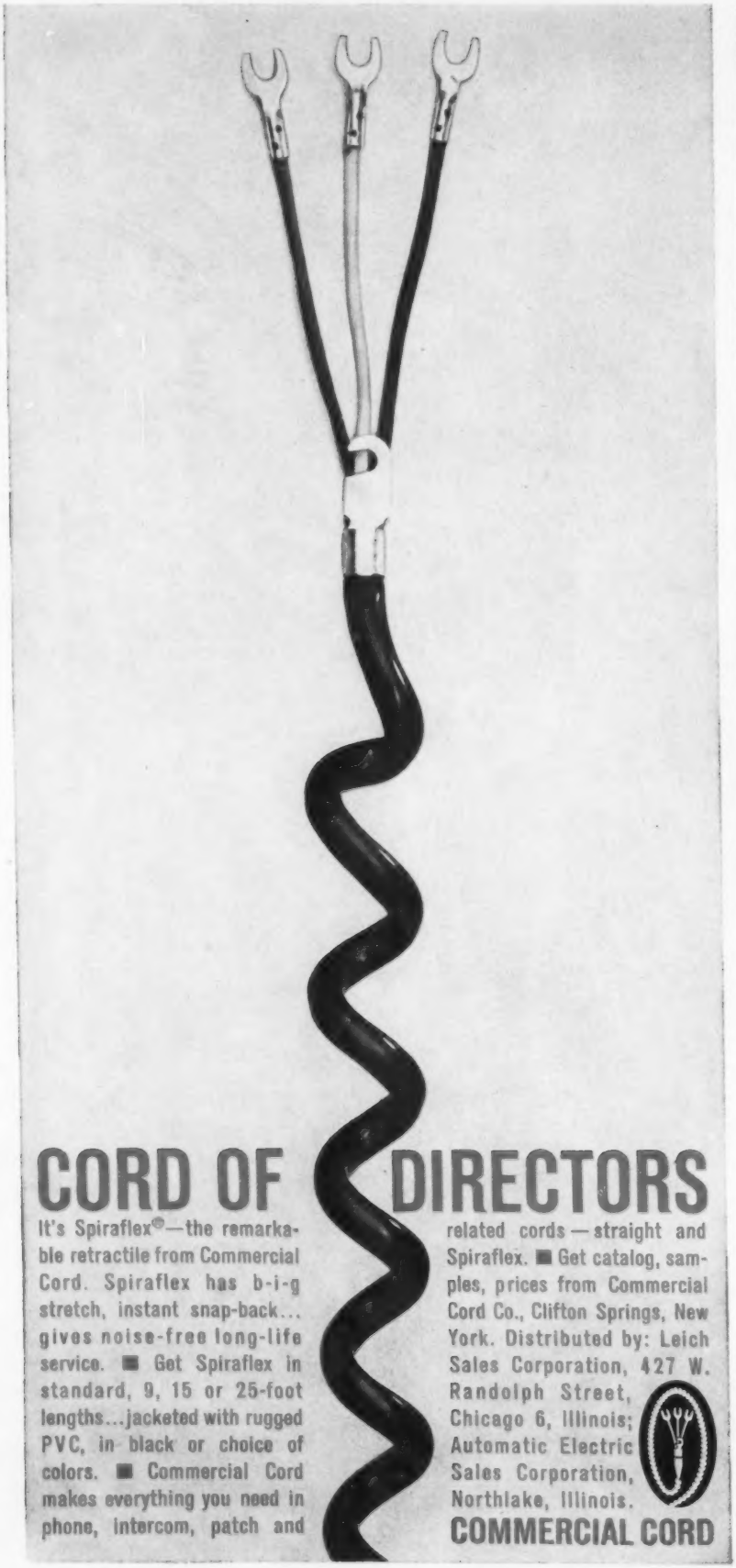
Keystone Telephone Wire is available in a full range of Class A line wire in 50M, 85M, and 135M tensile strengths, and meets the specifications of A.S.T.M., A.T.&T. and is approved by R.E.A. Galvanized bond, tie and construction wire are also available at your Keystone Distributor.

A phone call will bring you fast delivery . . . contact your nearest Keystone Distributor for your next wire need!

KEYSTONE STEEL & WIRE COMPANY, Peoria 7, Illinois

KEYSTONE
Wire for the Telephone Industry

. . . by the makers of famous Red Brand Fence


CORD OF DIRECTORS
It's Spiraflex®—the remarkable retractile from Commercial Cord. Spiraflex has b-i-g stretch, instant snap-back... gives noise-free long-life service. ■ Get Spiraflex in standard, 9, 15 or 25-foot lengths...jacketed with rugged PVC, in black or choice of colors. ■ Commercial Cord makes everything you need in phone, intercom, patch and related cords—straight and Spiraflex. ■ Get catalog, samples, prices from Commercial Cord Co., Clifton Springs, New York. Distributed by: Leich Sales Corporation, 427 W. Randolph Street, Chicago 6, Illinois; Automatic Electric Sales Corporation, Northlake, Illinois.
COMMERCIAL CORD

the type SH Zippertubing as a pliable conduit that is shipped in flat form so as to be easily stored in a minimum of space. The plastic zipper attached to the vinyl-impregnated glass-backing material simplifies cable jacket application, as the Zippertubing is simply placed around the wires and zipped closed.

Repair and maintenance of cables are also simplified by this zipper closure, the company maintains, because the cable is easily zipped open for inspection. If desired, however, the cable jacket zipper may be permanently sealed with ZT Sealer. Request NP1608.

■

DIRECTIONAL TREE FALLER—A new piece of equipment distributed by Idaho Northwoods Co. permits safe control of the direction of fall of heavily-leaning trees that threaten telephone and power lines, buildings or other improvements.

Called Trott's directional tree faller, the device also is a useful tool in right-of-way clearing and other situations where time or damage could be saved by accurately controlling direction of fall of problem trees.

The directional tree faller is manufactured in two sizes. A small model, weighing 51 pounds, normally will handle trees up to 14-16 inches in diameter. However, consideration must be given the degree of lean, location of heavy branches, and strong wind. A larger model is said to be able to handle larger and heavier problem trees. It weighs 152 pounds.

Idaho Northwoods Co. reports that Pacific Power & Light Co. equips field crews with the smaller model. PP&L reports that when trees too large to be handled by the smaller model are encountered, most can be controlled by "teaming" two small tree fallers side by side. The larger model is used only on the largest problem trees.

One man is said to be able to fell problem trees with the directional tree

TELEPHONE LOADING COIL ASSEMBLIES AND ACCESSORIES

TYPE C124 LEAD CASES

Equipped with Types 632 (88MH), 638 (44MH), 642 (88MH) or 641 (44MH) coils. Contain 4 to 76 coils—lead or plastic stubs.

★ Steel case assemblies available for manhole mounting and direct earth burial.

TYPE C125 STEEL CASES

Equipped with Types 632 (22MH), 638 (44MH), 642 (88MH) or 641 (44MH) coils.

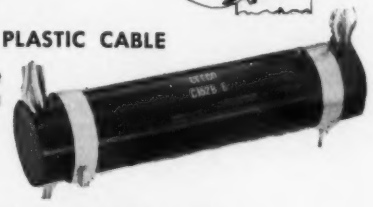
SPLICE MOUNTING ASSEMBLIES

TYPE 167 CASE FOR LEAD CABLE
TYPE 162 CASE FOR PLASTIC CABLE

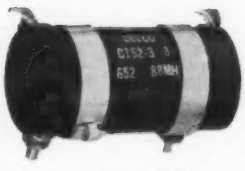
Using one to sixteen Type 632 (88MH), 638 (44MH), 642 (88MH) or 641 (44MH) coils.

TYPE C152 CASE FOR PLASTIC CABLE

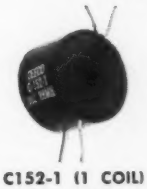
Sizes — One to twenty-eight coils. Using Types C652 (88 MH) or 651 (44MH) coils.



READY MOUNT LOADING COIL CASES FOR SPLICING CASES AND BURIED CABLE TERMINALS



C152-3 (3 COILS)

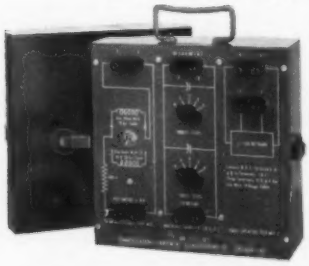


C152-1 (1 COIL) "BOLT MOUNTING"

TYPE C152 CASES

Are equipped with one to 26 type 652 (88 MH) or 651 (44MH) coils. For mounting in splicemaker cases and terminals.

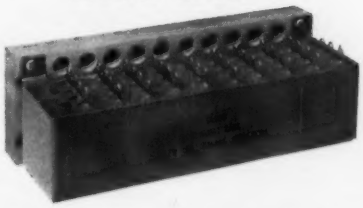
C-100 TEST SET



C-100 Test Set for making acceptance tests and locating loading irregularities.

Economical
Easy To Use
Reliable
Guaranteed Results

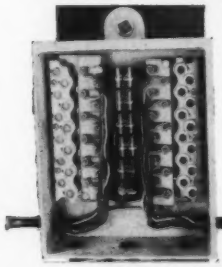
C600A1 CASE



C600A1 Case equipped with 10-C1574A Inductors for mounting on horizontal side of MDF.

TYPE 177 TERMINALS

FOR 6, 11, 12, 16 AND 18 PAIR RURAL DISTRIBUTION WIRE



★ Using Type 637A (88 MH) or Type 637B (44MH) coils.

★ Sold with or without coils.

TYPE 637A COIL

NONPROTECTED READY MOUNT ASSEMBLIES

(FOR ALL STANDARD PARKWAY TERMINALS)

16 PAIR No. CP16-137

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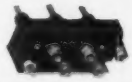

6 PAIR No. CP16-135

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TYPE C-1574-1 INDUCTOR

CEECO LOADING COILS ARE SOLD BY YOUR TELEPHONE EQUIPMENT SUPPLIER

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PARSONS® 77 TRENCHLINER®

DITCHES, LAYS CABLE for 1½¢ per foot

A cable installation department of a major telephone company recently cut cable laying costs of 5 to 9 cents per foot down to 1½¢ per foot with a 77 Trenchliner. Results such as these are not unusual with the 77.

Here's why...

SPECIAL CABLE LAYING DEVICE — rubber wheeled cable feeder protects cable, lays it down in ditch automatically as 77 moves ahead.

BIG CAPACITY, SMALL DIMENSIONS — the 77 delivers up to 21 lineal feet of trench per minute, yet isn't much wider than a yardstick. Ideal for close-quarter work.

DIGS TO 5′ DEPTHS, 6″ to 18″ WIDE — ladder type boom starts cut fast, holds accurate grade. Vertical set-in work, and undercutting is no problem.

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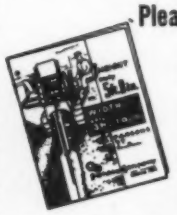


Please send bulletin on the 77 Trenchliner®

Name_____

Company_____

Address_____

City_____ State_____

faller. However, two-man crews—one applying and operating the tree faller and the other sawing—remove trees at a rate almost as rapid as normal falling.

Available for use with the tree faller is an accessory called the pole straightener. It can be employed, Idaho Northwoods says, to quickly and easily straighten utility or other poles leaning where earth has softened or caved. The accessory consists of an adjustable shaft and a 13½-in-square base plate with sod teeth. The shaft has a retracted length of 4 feet 3 inches and an extended length of 6 feet 8 inches.

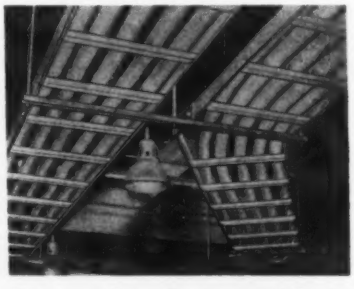
Power for the tree faller is provided by a built-in hydraulic ram. (On the small model, this is a 1½-ton ram). Each model is a five-piece assembly, and can be carried by hand.

Basically, the tree faller consists of two legs which are tied to the tree by a chain or chain-and-cable combination. One leg and the chain are adjustable to control angle of thrust of the ram. Hydraulic force of the ram controls weight of the leaning tree or snag while it is being cut off. The tree is more pushed than forced in the desired direction. Side movement is restrained by the chain. Attachment and adjustment of the equipment is reported to be simple.

The tree faller can serve as an emergency truck jack, or can be used as a "come-along" or in other circumstances where the power of a hydraulic ram can be utilized. Request NP1609.

•

SPLICE PLATES — Newly designed splice plates that reduce the cost of fittings 50 per cent and cut installation time 40 per cent, on all Chalfant Cable Tray installations, have been announced by The Chalfant Products Co., Inc.



The new plates, having special crimping slots on each end, slide onto the cable tray rails and are held tightly and securely in place by crimping, the company states. Since no fittings are needed to connect the splice plate with the cable tray, there is no time involved in inserting and fastening unnecessary fittings. A quick squeeze, with a channel-lock pliers, is all that is required to hold the splice plate and cable tray

PENTA TREATMENT!

It's Cleaner, Protects Better And Costs No More

Take your pick of *three* important reasons why you should preserve wood with PENTA treatment! Any *one* of them should cinch the matter.

1. Costs no more – Service records show PENTA treatment gives poles, cross ties and other lumber for exposed structure extra long life. Yet PENTA treatment costs no more than ordinary preservatives.

2. Won't leach out – Because PENTA is an oil-borne rather than water-soluble preservative, it doesn't leach out, leaving wood vulnerable to rot and termites.

3. Clean to handle – Construction and maintenance supervisors know that workmen handle clean wood faster, more efficiently – and with fewer kicks!

Reichhold is a major supplier of PENTA to the wood industry and to wood users. If you haven't done so yet, investigate this modern method of protecting your lumber investments – write for the name of your nearest Reichhold distributor of PENTA.

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Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Glycerine • Phthalic Anhydride
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Sulfuric Acid • Methanol

REICHHOLD CHEMICALS, INC.,
RCI BUILDING, WHITE PLAINS, N.Y.

securely and permanently in position. Installation time saved is therefore 40 per cent under conventional methods where fittings are used, the Chalfant company points out.

The new Chalfant splice plates are made of aluminum, galvanized steel and aluminized steel. According to the company, they travel in all degrees of vertical and horizontal directions where small radius fittings are normally used.

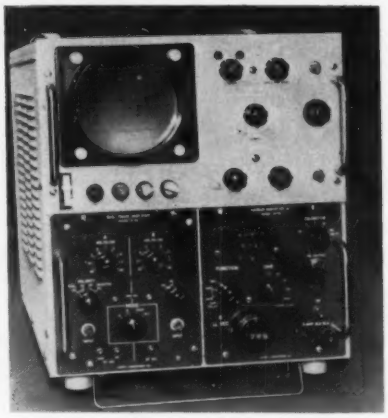
The new splice plate, says the company, readily fits all Chalfant Cable Trays regardless of the width of the tray. This saves time in specifying because special plates and fittings in various sizes no longer must be ordered for each job. Request NP1610.

•

WIDE BAND OSCILLOSCOPE — A new multi-purpose, wide band LA-270 oscilloscope available from Lavoie Laboratories is said to be the only wide-band (dc to 70 mc), oscilloscope designed to meet military specifications. A totally modular packaged scope, it features full 6 cm vertical deflection and will accept a standard probe.

It employs a 5-inch dual post accelerator cathode ray tube and provides a 6 x 10 centimeter calibrated display.

The versatility of the instrument is enhanced, Lavoie says, through the use of single and dual channel plug-in vertical pre-amplifiers and a plug-in sweep delay and marker unit.



It is claimed to provide a simple, rapid and accurate method of complex wave evaluation. It features a plug-in sweep delay and market unit, model M-70, which permits a continuously adjustable and calibrated sweep delay or a Z axis marker, both derived from the same time base. The horizontal sweep circuitry incorporates 24 calibrated ranges with a X 10 magnifier extending the fastest sweep to 0.01 microsec/cm.

An edgewise meter, calibrated in vertical reticle divisions, indicates the vertical beam position, Lavoie states, even with the screen obscured by a camera.

All circuitry is built into separate, removable sub-assemblies to facilitate service. Request NP1611.

•

WIRE TRACER—A new quick way of identifying wires in conduit raceways, or when continuity testing is required, is Product for Industry's Circameter.

Suitable for use by electrical contractors or city and state inspection departments, this new method is said to enable one man to identify wires faster than two men could, using other methods.

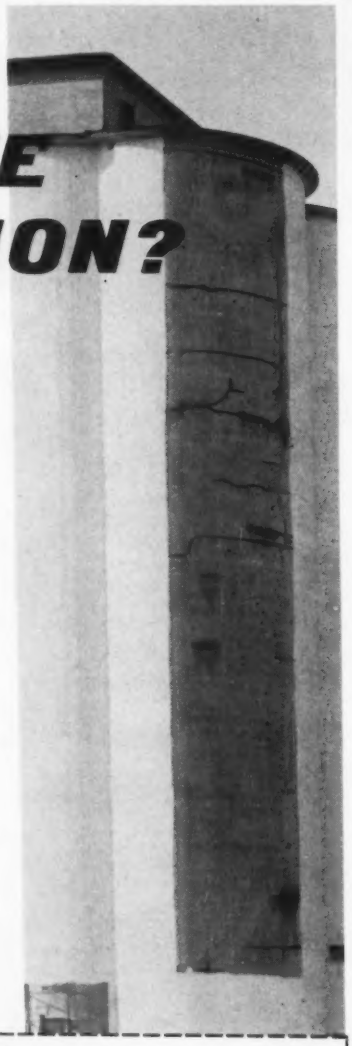
The Circameter eliminates errors and facilitates testing of wires to meet building codes and blue-print specifications in the field, in production or maintenance.

It can also be used in continuity testing (ohms scale 0 to 100,000), and in research and development projects where continuous testing of wires,

CONCRETE EROSION?

it can't happen with KWAL-KRETE Paint

Concrete is one of the most durable of man-made materials. But it IS vulnerable to the weather. All rules of good maintenance point to painting the masonry surface with **KWAL-KRETE** . . . waterproof and proven so by independent laboratory tests. **KWAL-KRETE** is used and specified exclusively by leading telephone and utility companies.



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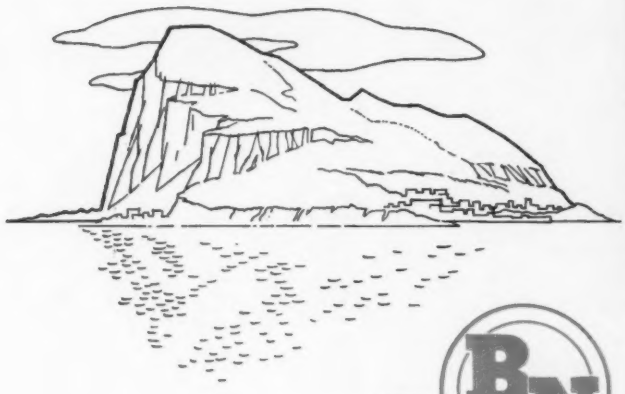

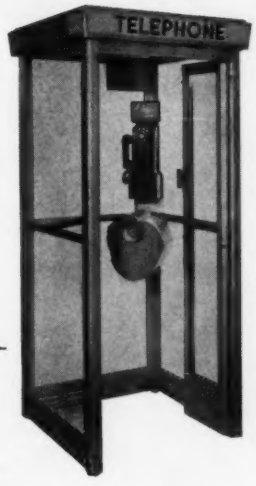

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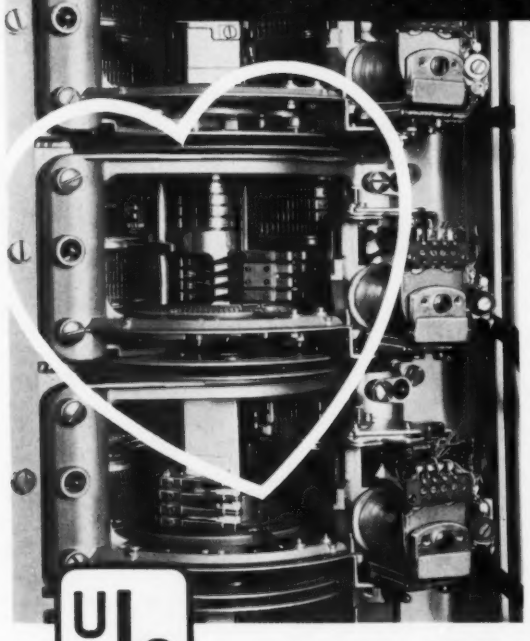

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The use of the USI Motorswitch enables central offices to combine the simplicity of step-by-step with superior speed and flexibility of common control!

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Drilling is your Ka-Mo specialist's stock in trade. And his field experience, combined with the quality line of Ka-Mo drilling equipment, has enabled many a company to cut costs and to speed cable, conduit, and duct work . . . post hole drilling, too.

Your Ka-Mo specialist has a drill, feed, and cutting head for practically every drilling requirement. There are gasoline, air, hydraulic, and electric models to choose from for drilling holes from 2″ to 48″ in diameter and larger.

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PLEASE SEND KA-MO LINE BROCHURE

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COMPANY_____

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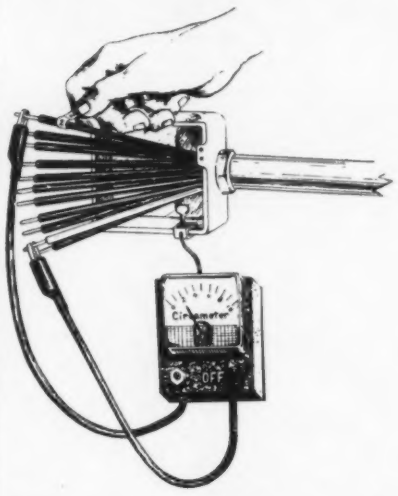
cables and harnesses are required, the PFI company states.

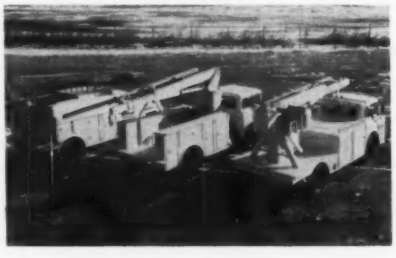
The PFI wire tracer is magnetically shielded for accurate performance. The



Circameter is also described as ruggedly constructed and shockproof. Request NP1612.

•

REAR, SIDE, CENTER-MOUNT DERRICKS—Three new models of the Commander Series hydraulic, continuous rotating derricks are available from Tel-E-Lect Products Inc., according to an announcement by R. L. Kennedy, vice president and general manager.



The company states that the Model "RM," for rear mount (see right of photo), is entirely new in the pole-line construction industry. It features a derrick-mounted command post which incorporates all controls and is said to give the operator complete command of the job in all working positions. Described as unique in new-style-body design and over-rear-wheel installation, the "RM" is designed to combine derrick, body and chassis for the maximum use.

The Tel-E-Lect Model "SM" derrick, for side mount (left, in photo), is designed for fast and easy installation on standard line construction bodies. The "SM," which includes the rear platform and stabilizer jacks, mounts on either the street or curb side at the rear of the chassis. The hydraulic control panel may be installed at the operator's con-

COMMUNICATION MEASURING INSTRUMENTS FROM SIEMENS & HALSKE AG

THE LEVEL TRACER TYPE REL 3 K 211

A portable, self-contained Transmission Measuring Set for the VISUAL DISPLAY without external accessories of

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- RETURN LOSS
- IMPEDANCE COMPARISON
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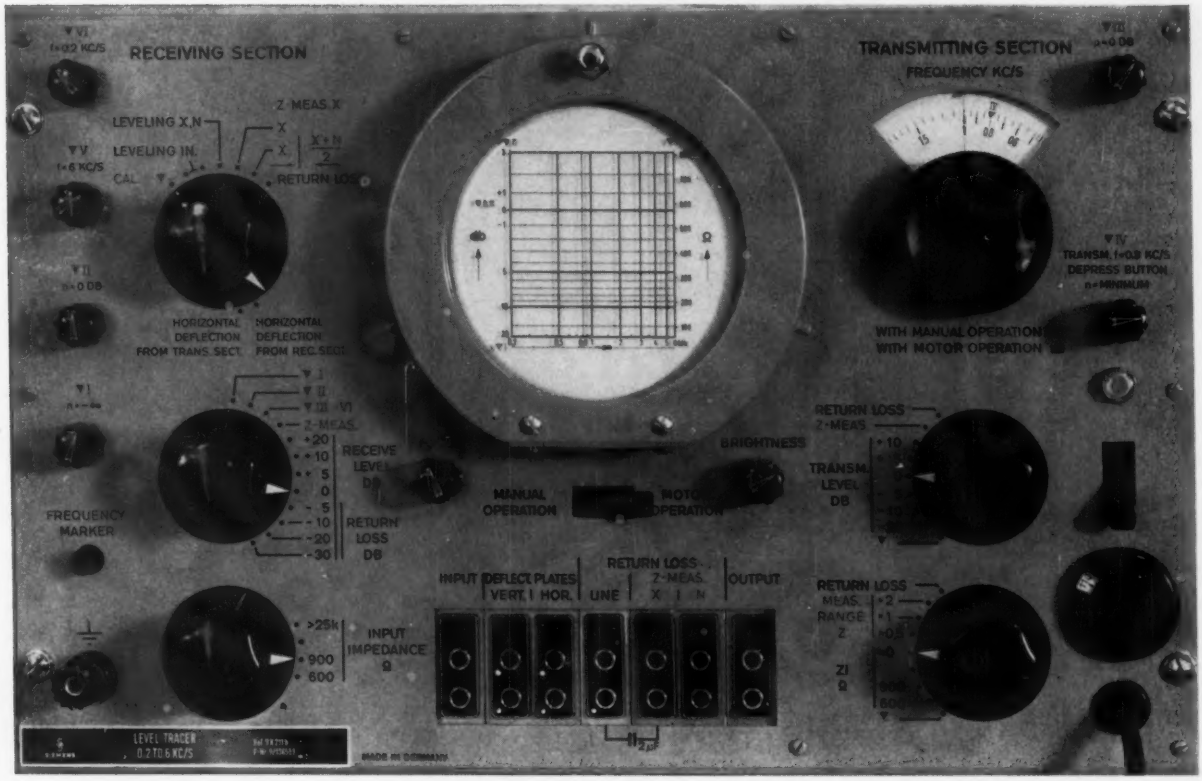

Type Rel 3 K 211 b — 200 cps — 6 kc, logarithmic frequency display (db)

Type Rel 3 K 211 g — 200 cps — 4 kc, linear frequency display (dbm)

REDUCE MEASUREMENT TIME 80% for Transmission Measurement
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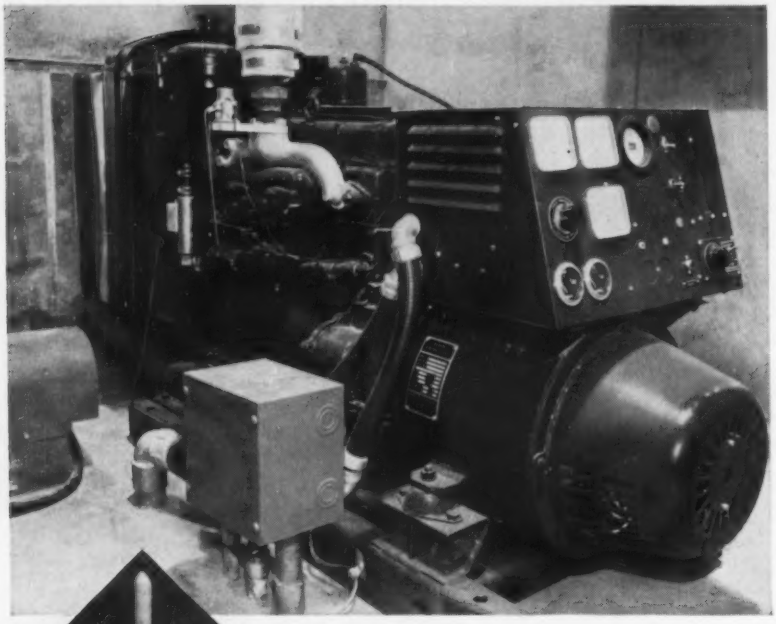
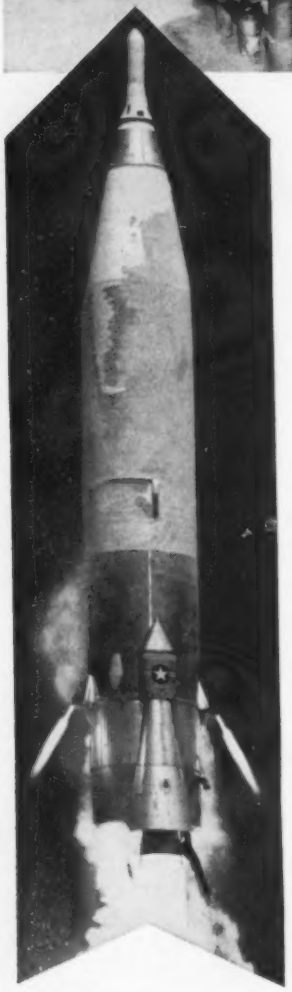
• MODEL 15R61, *15 KW, 115/230 volt AC. Remote start, gasoline operated.*





KOHLER
ELECTRIC PLANTS
Emergency power for micro-wave communications at Spokane Atlas Missile Sites

Kohler stand-by electric plants installed at Fairchild A.F.B., safeguard micro-wave communications of guidance of Atlas Missiles built by Convair (Astronautics) Division, General Dynamics Corporation.

Should normal electric power be cut off, the Kohler plants will supply immediate electricity for 9 micro-wave sites surrounding air base and launching pad.

The Kohler plants passed rigid tests for this vitally important installation—and produce maximum capacity at ambient temperatures from −30°F. to 110°F., at 2000 to 4000 feet above sea level, and maintain close voltage regulation.

Known everywhere for reliability, Kohler electric plants are manufactured in sizes to 115 KW, gasoline and Diesel. Write for folder L-45.

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ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS
ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

venience, either on or opposite the tower, or within the body.

The Model "CM," for center mount (center of photo), allows side workability with large rear platforms and long overhangs, the company points out. Identical right and left controls are mounted on both the street and curb sides of the derrick.

All Commander series derricks feature hydraulic control and drive systems plus 360 degrees continuous rotation. The continuous rotation is accomplished by a Tel-E-Lect-designed collector block which transfers hydraulic oil under pressure from the stationary, chassis-mounted pump to the rotating derrick and equipment. The company says this feature eliminates twisted hoses, the number-one cause of hydraulic line failure. Air and electric power are adaptable to this collector block.

Tel-E-Lect says a heavy-duty drive and bull-gear mechanism, similar to that used in a dragline, rotates the derrick assembly and allows heavy loads to be rotated without damage.

All models of this derrick series horizontally lift 2,000 pounds with stinger extended to 23 feet; and 8,000 pounds with derrick at 80 degrees.

The derrick lift cylinder utilizes the built-in protection of a pilot-operated holding valve which, the manufacturer states, prevents cavatation, creeping and overloading at varying angles of operation. The hydraulic system is designed for 2,000 pounds psi operation. Request NP1613.

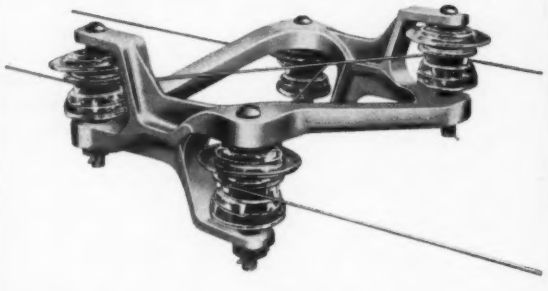
•

AUGER—Trainer Associates has announced the availability of its Poler-Bore Auger, which is said to be able to

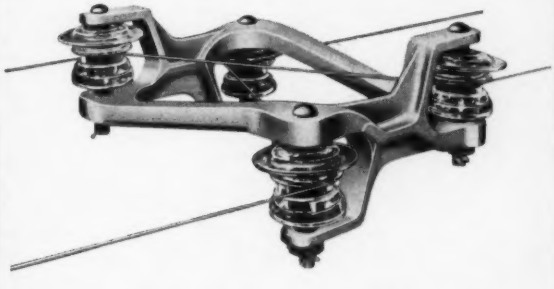
penetrate flint boulder conditions because of an improved design that provides faster action and an increased down-thrust for driving into harder materials.

As an example of a situation where

Case Aluminum High-Strength Span Transposition Brackets, originally designed for 8" wire spacing, *can* be used for 12" wire spacing, when turned to a right angle as follows:



EXAMPLE #1 — 12" Right over Left
SE-1786 right hand, 8" high-strength span transposition bracket gives a **12" Right over Left** wire transposition when turned to a right angle.



EXAMPLE #2 — 12" Left over Right
SE-1795 left hand, 8" high-strength span transposition bracket gives a **12" Left over Right** wire transposition when turned to a right angle.

Sold by leading Distributors in the United States.
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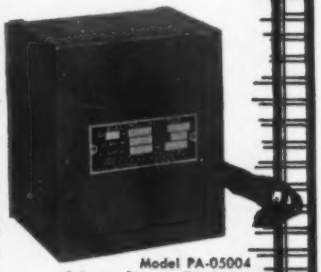
Make SCHAUER your source for dependable DC POWER!

SCHAUER is recognized by the Telephone Industry throughout the world as a leading manufacturer of battery eliminators and battery chargers for almost every DC power requirement. You save with Schauer—on low first cost, low operating cost, and reliable service. See your Jobber or write for Bulletin No. 1470.



Model PA-05004
Schauer Battery Eliminator

Here's a sure SCHAUER power source for the operator's circuit on magneto switchboards

Schauer Type PA-05004 Battery Eliminator delivers constant, hum-free direct current to the operator's circuit. Equipped with relay for automatically transferring power to stand-by dry cells in the event of AC failure. Standard capacity is 4 volts DC at 0.5 amps. Steel case, for wall mounting is 5½"x6¼"x4".

Rectifier Division
SCHAUER
MANUFACTURING CORP.
4514 Alpine Ave., Cincinnati 42, O.

this auger has been used, Trainer described a project where a mining engineer was assigned the task of penetrating residual clays to bedrock in places over 35 feet deep and bringing up a large quantity of clay-bearing barite.

Costly downtime has been kept to a minimum on the mining project, Trainer said, because the PolerBore auger is able to remain relatively free of the sticky red clay found at the site and because of the simple replacement method used when tooth damage requires replacements. Ordinary mounting equipment has been discarded, Trainer states, in favor of a "Spirol" pin. The penetrator is attached by hammer driving the Spirol into the shank of the penetrator; the same hammer-driving action is used again for removal of the unit. Request NP1614.

McDavitt Vice President Bell Labs, Dickieson to New Post

M. B. McDavitt, director of transmission development of Bell Telephone Laboratories, was elected a vice president of the company, effective Apr. 1. He will assume the responsibilities of M. H. Cook, vice president in charge of apparatus development, design engineering and quality assurance.

On Apr. 1, Mr. Cook will begin a new assignment concerned with long range plans and operations of the laboratories.

A. C. Dickieson has been named director of transmission development, succeeding Mr. McDavitt, also effective Apr. 1.

Mr. McDavitt began his Bell System career in 1925 in the development and research department of the American Telephone & Telegraph Co. and transferred with the department to Bell Laboratories in 1934. Since that time, he has been associated with the development of switching and transmission systems for Bell System use.

During World War II, he specialized in military communications systems planning and later served as director of the Bell Laboratories School for War Training. In 1952 he was named director of transmission development.

A native of Texas, Mr. McDavitt received an EE degree from the University of Virginia in 1924 and an MSEE from Massachusetts Institute of Technology in 1926. He is a Fellow of The American Institute of Electrical Engineers and a senior member of the Institute of Radio Engineers.

Mr. Dickieson was born in New York City and studied electrical engineering at Polytechnic Institute of Brooklyn.

He began his Bell System career in 1923 in the engineering department of Western Electric Co. and transferred

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"JUSTRITE" on a safety can or oily waste can is positive assurance of protection. Millions of these carefully designed and engineered cans are in use in thousands of plants all over the United States. Reduce fire hazards due to benzine, oily rags and waste. JUSTRITE Safety Cans are the finest cans for use for flammable or highly volatile liquids. Both types of JUSTRITE cans are Underwriters' Laboratories and insurance companies' approved.

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Send today for your copy of the bulletin showing the Justrite Safety Benzine Cans, Oily Waste Cans and Plunger Cans.

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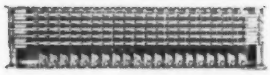
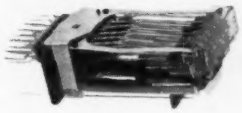
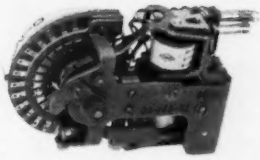
4 ways NEC can fill requirements for long-time dependable switching







WIRE-SPRINC RELAY

Life:
● 300 million operations, standard type. ● 1 billion operations, long-life type.

Highly reliable contact performance

Quick operation, quick release

Operate:
● 3.5 milliseconds, 10 Watts power

Release:
● 2.5 milliseconds, 8 transfer contacts

Application:
● Crossbar telephone switching systems ●Control equipment, computers, switches and converters.

REED SWITCH

Hermetically sealed

Life:
● 200 million cycles at 0.2 amp, 50-v d-c.

Gold-Nickel-Ferrous alloy contact material.

Quick response

Operating time:
● 1 millisecond

Applications:
● Magnetic interlocks ● Proximity switch ● Pulse switch ● Scanning switch

WIRE-SPRING GROSSBAR SWITCH

Life:
● 100 million connections

Good contact performance, using wire-spring contact members.

Small size, light weight:
● 27.2 x 6.4 x 6.4 inches 39.7 pounds

Application:
● Crossbar telephone switching systems ●Telemetering ●Scanning systems

BIDIRECTIONAL ROTARY STEPPING SWITCH

Detent mechanism provides stable and precise bidirectional stepping action.

Life:
● 40 million steps

Small size, light weight:
● 3-5/8 x 2-11/16 x 1-9/16 inches 8.8 ounces

Driving power:
● 11 watts, forward magnet ● 4 watts, backward magnet

Application:
● Impulse regenerator for auto matic telephone system ● AGC circuit in telephone ● General multi-range instruments in ● Self-balancing digital voltmeter

The skilled handwork required in assembly is one reason Japan excels in the production of electromechanical devices. NEC is one of the world's largest producers, offering a complete line of switching devices. NEC's annual production is in excess of 5 million units.
The devices shown above are available in quantity. Production capacity of wire-spring relays, for example, is 200,000 monthly; reed switches, 100,000 month. Detailed specifications available by writing....

Systems / Components

NEC *Nippon Electric Company Ltd.* P.O. Box 1, Takanawa, Tokyo, Japan

LOW COST WAY TO LEARN THE TRUE STATUS OF YOUR POLE ROOFS

SPECIAL ROOF-PRODDER DEVELOPED FOR FAST, THOROUGH INSPECTION

Out of sight, out of mind is likely to be the case with many pole roofs. And when inspection is scheduled, "rubbering out" hot lines is a costly, time-consuming job. Now, Pole Sprayers' service features a new pole roof-prodder, a unique suggestion made by one of our good utility customers. In the hands of an experienced operator working below the crossarms, it can accurately "feel out" and measure the extent of decayed areas. As a result, the true condition of all pole roofs may be quickly determined so that corrective action may be taken if needed.

Pole Sprayers' service includes this inexpensive "inspection-plus" feature at a small additional charge. Together with POLE TOPPERS, special roof caps which may also be installed from below the crossarms, Pole Sprayers, Inc. offers the most complete in-place pole preservation service available.

For further information on how to keep your standing poles in service longer . . . write to Pole Sprayers, Inc., 976 Ellicott St., Buffalo 9, N.Y.

Pole Sprayers Inc.

SERVING UTILITIES SINCE 1935

to Bell Laboratories when it was established in 1925.

For most of his career he specialized in long distance transmission systems. During World War II, he was in charge of anti-submarine warfare activities and of carrier systems for the Signal Corps.

In 1954 he was responsible for planning the communications system for the original Distant Early Warning (DEW) line stations in Alaska. He was named director of transmission systems development in 1951.

Mr. Dickieson is a Fellow of the American Institute of Electrical Engineers and the Institute of Radio Engineers.

General of SE S. C. Employe Rescues Several, Gets Medal

Robert L. Batson Jr., native of South Carolina and combination man for General Telephone Co. of the Southeast at Andrews, S. C., has been awarded the coveted LaCroix Silver Medal and $1,000 cash for successfully helping the tenants of a South Carolina farm to safety when their home was on fire last year.

The LaCroix Silver Medal of the General Telephone System is awarded to an employe for performing service—at the risk of personal safety—where outstanding action on his part resulted in the saving of life and/or property.

The award is the sixth one to be made to an employe of General Telephone & Electronics Corp. since the foundation of the Morris Felton LaCroix Awards in January, 1955.

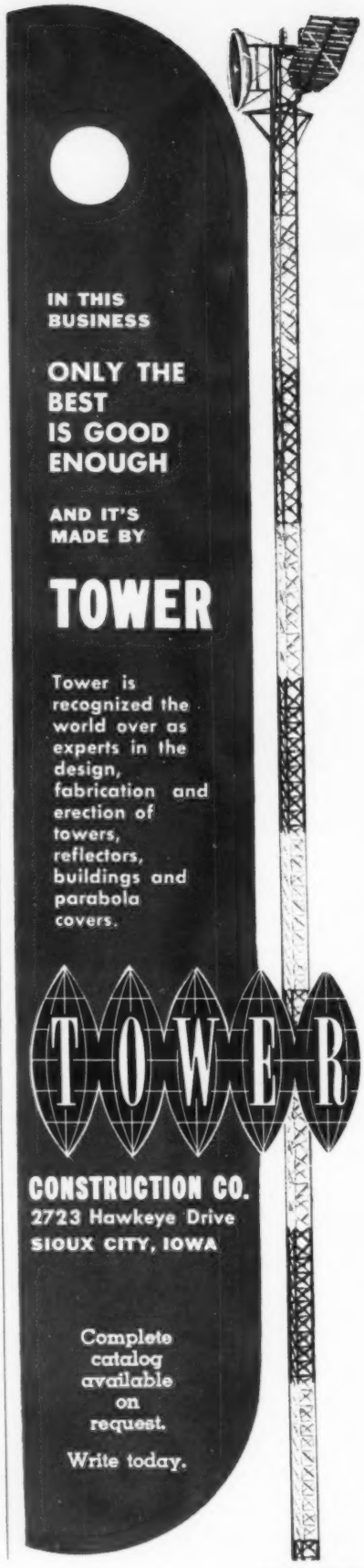
On Mar. 4, 1960, while inspecting a damaged telephone line near Winnsboro, S. C., Mr. Batson noticed that the home of a tenant farmer was ablaze. The occupants in the house were asleep at the time Mr. Batson entered the house and unaware that their home was on fire.

Although the roof appeared ready to collapse from the blaze, Mr. Batson carried out an elderly woman and then assisted several other people from the building.

After all occupants had reached safety, Mr. Batson re-entered the house several times removing furniture. He then noticed a live power line lying on the ice-covered ground, and immediately cleared everyone from the vicinity of the wire and notified the power company. He also remained in the area until all possible assistance had been rendered.

Hear Oregon Rate Request

Oregon Public Utility Commissioner Jonel C. Hill was to have held a hearing on Apr. 13 on the Haines Telephone Co.'s application for a rate increase.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ONLY THE BEST IS GOOD ENOUGH
AND IT'S MADE BY
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Tower is recognized the world over as experts in the design, fabrication and erection of towers, reflectors, buildings and parabola covers.
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CONSTRUCTION CO.
2723 Hawkeye Drive
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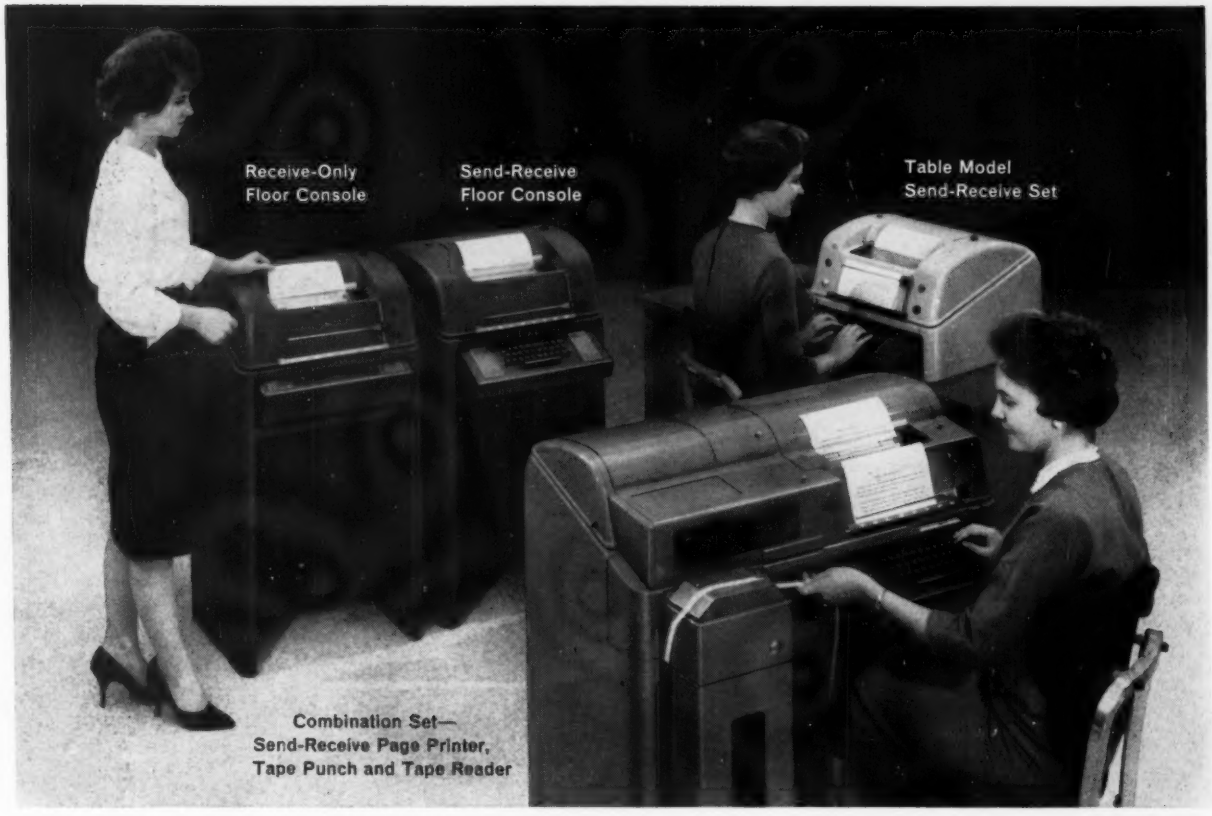
Complete catalog available on request.
Write today.



Which Teletype printer is best for you?

Which of these Teletype Model 28 page printers is best for your message and data communications needs? Each will perform the basic function of all Teletype equipment—to flash information over long or short distances. But in addition, each has varying capabilities to meet the requirements of the individual user:

Send-receive page printer in console—probably Teletype's most familiar product; for sending as well as receiving page copy.

Receive-only page printer in console—the same machine, but without a keyboard. For use where information need only be received, not sent. No operator is required.

Table model—with or without keyboard . . . similar model available for rack mounting.

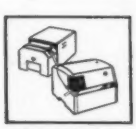
Combination set—a complete message center in one compact cabinet. In addition to page printer and keyboard, it contains facilities for preparing punched tape and for transmitting and receiving via tape.

All of these Teletype Model 28 page printers feature the Stunt Box, a built-in "programming" mechanism that will inexpensively handle a wide variety of remote control and switching tasks such as automatic station selection. All models can be supplied with sprocket-feed and tabulating mechanisms for use with multi-copy business forms. All are available, too, in a choice of cabinet colors to match office decor.

Teletype Corporation manufactures this equipment for the Bell System and others who require the utmost reliability from their data communications. Teletype equipment can be used with Data-Phone and other communications services.

TELETYPE®

CORPORATION • SUBSIDIARY OF *Western Electric Company* INC.


Tape Reader and Typing Tape Punch

Send-Receive Page Printer

Automatic Send-Receive Set

Free Model 28 Line folder. Write Dept. 65-B, 5555 Touhy Avenue, Skokie, Illinois.

New techniques in COMMUNICATIONS

Gustav Hirsch Organization, Inc., offers the most comprehensive program in the communications industry — skilled engineering, quality construction and many special services.

GHO projects include toll dialing, microwave circuiting and automatic switching. For expansion or an entirely new system, GHO is ready to serve you.

GHO
GUSTAV HIRSCH ORGANIZATION, INC.
COLUMBUS 12, OHIO
HUdson 8-0611

TROUBLE CLEARING

Continued from page 32

case should not be closed to "cable trouble" when the pair is changed. That would be a false and deceptive record.

There are two methods of handling this situation: (1) Close the case to "Found OK" with the notation "Pair changed on suspicion," and (2) carry the case over until a definite solution is found. The latter method will spoil the company's "Clearing Time" and "Carried Over" record, but it tells the truth and it will not happen very often. To prevent any unfavorable reaction on the part of the subscriber he may be told frankly: "We admit that this case has us puzzled. It may take us a little time to find it. In the meantime, if you do not object, we will call you at frequent intervals to ask if you have had any more trouble." This will usually result in full cooperation by the subscriber and will stop the repeated reports.

Careful Testing Important

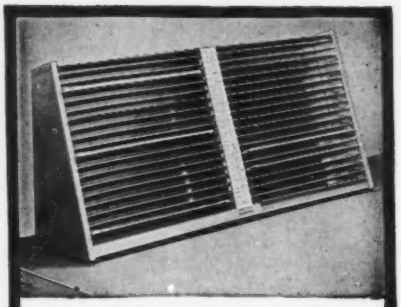
Many obscure cases of trouble may be found by more careful testing. Thus a disappearing open will probably have a variable resistance. If a voltmeter or an ohmmeter is connected to the circuit and the needle watched for some time, it will be seen to waver. Noise may also be heard on the circuit. A breakdown test may permanently open the circuit making it easy to locate. In case of a come and go short or ground, a "trap" may be devised which will sound an alarm when the trouble is in. Then immediate action can be taken.

If the office has a service observation board, that department can often be asked to "ride" a certain line to catch "come and go" trouble.

Two cases of trouble are often present at the same time. To clear the obvious case and make no further tests or inspection can lead to a repeated case. We recommend that a thorough inspection of the installation from ground clamp to terminal be made on each station visit. All unsatisfactory conditions should be corrected. If this involves more time than can be spared that day, a written order should be prepared to take care of this work at the earliest opportunity.

Wet Pair Trouble

In some cases, where the cable is slightly damp, the trouble may become heavy enough to cause a permanent on a working pair, while vacant pairs do not show trouble. This is due to the electrolytic action of the central office battery. We have seen many cases in which the line was changed to an



Trouble Recorder Card Rack

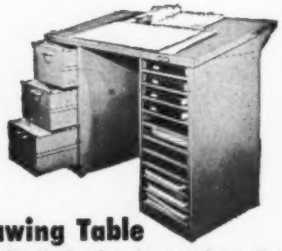
For fast orderly sorting of Trouble-Recorder cards, has 38 card slots in two banks with index strip between. Base is 38″ by 8″. Height 15″. No. D-30325-1.

Telephone Office Equipment

to lighten your work and improve efficiency

Work Bench

For repair, assembly, test and paper work. Top drawer divided into 24 compartments for parts and tools. Large file drawers are for circuit drawings. 54″ x 25″ top covered with masonite. Height 36″. Drawers may be inserted from back to reverse position of kneehole. No. D29978-3.



Drawing Table

For circuit drawing in crossbar offices, provides central location for reference material. Masonite top is 30″ x 60″. Height 36″ at front, 42″ at rear. Three large file drawers at left for drawings. Eleven shelves at right are 2½″ high, 14″ wide, 18″ deep for sketches, sequence charts, book type SD sheets, trunk serials, etc. No. D30326-1.

Color of all units: Baked-on gray enamel unless otherwise specified.

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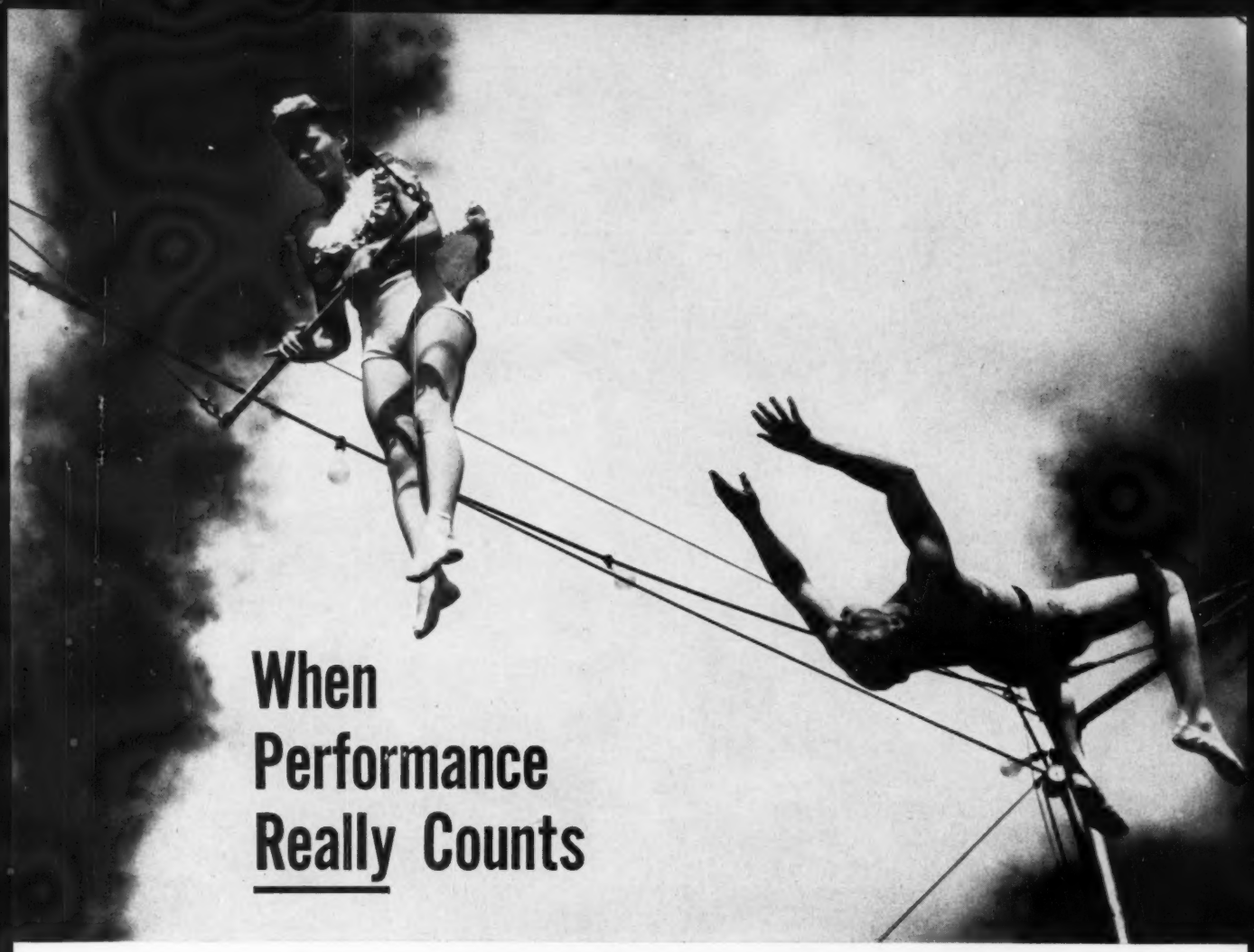
Neubauer
MANUFACTURING CO.
517 LOWRY AVENUE N. E.
MINNEAPOLIS 18, MINN.



When Performance Really Counts

• Southwire Galvanized Steel Strand

STRAND SIZE	5/8"	1/2"	7/16"	3/8"	5/16"	9/32"	1/4"	3/16"
WEIGHT PER 1000'	813 lb.	517 lb.	399 lb.	273 lb.	205 lb.	164 lb.	121 lb.	72.9 lb.
MINIMUM BREAKING STRENGTH IN POUNDS								
ASTM A-122-54T								
Galvanized (Single Galv.) Common	11600	7400	5700	4250	3200		1900	1150
Class A (Double Galv.) Common	11600	7400	5700	4250	3200		1900	1150
Class A (Double Galv.) Siemens-Martin	19100	12100	9350	6950	5350	4250	3150	1900
Class A (Double Galv.) High Strength	29600	18800	14500	10800	8000	6400	4750	2850
Class A (Double Galv.) Extra High-Strength		26900	20800	15400	11200	8950	6650	3990
Class A Utilities Grade, A.T.&T. and Western Union Spec.—7-wires		25000	18000	11500	6000*	4600		2400**
ASTM A-363-55T (No welds)								
Weldless High-Strength		18800	14500	10800	8000			
Weldless Extra High Strength		26900	20800	15400	11200			

*weight per 1000'—225 lbs. **weight per 1000'—80.3 lbs.

Trapeze artists defy death to please the crowd, but they never take chances with faulty equipment. Care beats dare by far.

So it is with Southwire Galvanized Steel Strand. Manufactured under stringent standards of quality control, it meets or exceeds applicable ASTM specifications . . . is preformed to eliminate flared ends when sheared. Quality extends even to reels which are premium non-returnable type. Comes in 250', *500', and 1,000' coils, and in 2,500', *5,000' and 5,280' reels. Special packaging to meet your requirements is available.

Specify Southwire Galvanized Steel Strand for ground, messenger and guying applications and be sure of quality.

Stock items

- Bare and Weatherproof Copper and Aluminum Line Wire
- Neoprene, Polyethylene, and VWP (Vinyl) Weatherproof Copper, Aluminum and Triplex
- U.R.C. (DBWP, TBWP) Copper
- Copperweld® Conductors
- Copper and Aluminum Building Wire
- ACSR and All Aluminum Cable
- Galvanized Steel Guy Strand and Static Wire
- Aluminized Steel Guy Strand and Static Wire
- Aluminum Alloy Wire
- Cable Accessories
- NM Sheathed Cable
- THW Building Wire

• ALSO FABRICATORS OF COPPER AND ALUMINUM FOR WIRE AND CABLE MANUFACTURERS

Southwire® Company

Carrollton, Georgia—TErrace 2-6311

NEW TOOL "SNAPS" OFF COVERS

Wiring is always accessible in Pancake Overfloor Raceways. And Wiremold's new 656 Cover Removal Tool makes it even easier to get at wiring, or to relocate Pancake 1500 and 2600 systems. Every installer should carry this work-saving tool.

1500 / 2600 PANCAKE®

by WIREMOLD®

THE WIREMOLD COMPANY
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ADams 3-6251

ARPS MODEL L-12 Trench Devil CHALLENGES ALL COMPARISON!

- DIGS WIDER - DEEPER - FASTER THAN ANY KNOWN COMPETITION
- COSTS LESS TO BUY - OPERATE - MAINTAIN
- SPEEDS UP TO 1200 FT. PER HOUR

GET THE FACTS and complete specifications on the Trench Devil from this specially prepared brochure.

- SELF PROPELLED
- POWER BOOM CONTROL
- REVERSIBLE DIRT CONVEYOR

OTHER MODELS

MA-2 - Self Propelled. Slightly less capacity than L-12

- JR Trencher Economy Model, hand winch propelled.

• TRENCHERS • HALF TRACKS • DOZERS • UTILITY BLADES

ARPS CORPORATION
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NEW HOLSTEIN, WIS.

apparently good pair and in a few days a repeated report was received. Sometimes this was done more than once, and we know of cases where the line was finally put back on the original pair which had now dried out. This causes many needless repeated cases.

One wet pair is a case of cable trouble. If it is treated as such and cleared, many repeated reports will be prevented and the company may be saved from a serious cable failure.

A dial switchboard may be the source of disappearing and repeated trouble because calls from one subscriber may take any one of many possible routes through the board and one of these routes may be defective. This is controlled by frequent routine tests. Also, suspicious cases should be analyzed by someone who is thoroughly acquainted with the dial equipment.

Finally, repeated trouble will be reduced when every one concerned is "on his toes" and treats each individual subscriber trouble report as a serious matter.

CHEMICAL BRUSH CONTROL

Continued from page 30

reduction in over-all right-of-way maintenance costs.

This right-of-way maintenance cost savings factor, together with the factors of providing better service and reduction of line maintenance costs through brush free lines, emphasized the fact that we could not afford to overlook chemical brush control.

The next step after top management approved the program was to set up a procedure to effect implementation of the program by the contractor, from which was evolved a work sheet—"Record of Trim and Spray Brush Control" (See Chart III).

The procedure stipulates that the contractor shall be furnished a complete set of line maps for each exchange which constitute an authorization to trim, clear and treat all lines therein.

This procedure, implemented by the use of the "Record," eliminates costly and time-consuming pre-survey of lines for the purpose of preparing work sheets covering work to be done by the contractor.

The "Record" is prepared in duplicate by the contractor's foreman each day. Original copies are forwarded to our office and duplicate copies to the contractor's office weekly. The original copy is used by our inspector as a guide in the initial inspection and verification of work completed.

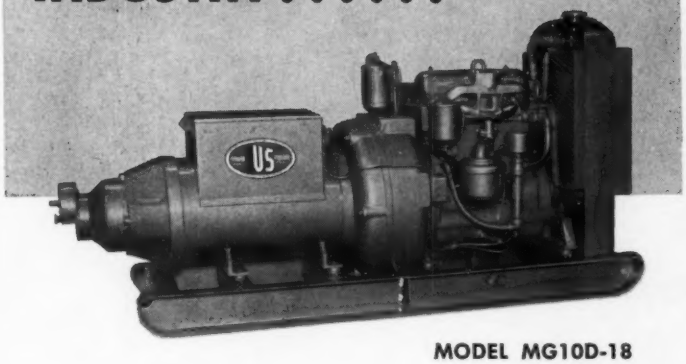
The inspector, at the same time, notes sub-standard plant conditions found in

POWER SURETY

OF THE COMMUNICATIONS INDUSTRY.....

10 KW DIESEL MICRO POWER

WITH NEW "BRUSHLESS" GENERATOR



MODEL MG10D-18

"NO-BREAK" MICRO POWER ENERGY IS USED...

- at telephone central offices—carrier repeater stations.
- on Microwave installations for communications, remote control, telemetering.
- by public utilities for protective relaying, telemetering and load distribution.

U.S. MOTORS 10 KW DIESEL MICRO POWER functions either as a voltage stabilizer when power from the normal source is at usable, but uneven value — or as the independent power supply when there is a complete power failure. Regardless of the situation, critical communications equipment is assured a constant source of stable voltage electric power at all times. Micro Power, smoothly and with no break in required voltage, transfers the load back when commercial power is restored, at the same time continuing in its full time role of eliminating voltage droop, drop, or break.

10 KW DIESEL MICRO POWER FEATURES —

- no brushes, commutator, or slip rings to service or replace with new brushless generator
- squirrel cage motor with less than one percent slip
- conservatively rated bearings
- diodes arranged for easy access
- voltage adjusting potentiometer
- magnetic amplifier regulator mounted directly on unit
- overvoltage protection

authorized sales and service representatives in...

Chicago, Ill. *Dallas, Tex.* *Denver, Colo.* *Detroit, Mich.* *Jacksonville, Fla.* *Jersey City, N. J.* *Los Angeles, Calif.* *Portland, Ore.* *San Francisco, Calif.*

UNITED STATES MOTORS CORPORATION MICRO US POWER OSHKOSH • WISCONSIN

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102 West Fifth Avenue • Oshkosh, Wisconsin

MAGNOLIA SPRAY-ON CHEMICALS

SPEED UP POLE LINE REPAIR WITH

RUST-RID

Spray rust away instantly—here is the fast, simple and effective way to free corroded nuts, bolts, studs, pipe threads and other pole line hardware. You can spray from any angle—and reach into places that would usually be inaccessible.

TELEPHONY GREEN

Touch-up Spray Paint Matching Color Green

Here is the perfect way to do your emergency touch-up painting on passenger cars, commercial vehicles and other equipment where the "Telephone Green" color is used. Dries within 5 minutes to a hard, glossy finish. Easy to use—always ready. Saves man hours and eliminates waste and mess of brushes and spray equipment. Durable on metal, wood or plastic surfaces. For interior or exterior use.

Full 16 oz.—12 to the carton
CODE TU-1

MAGNOLIA CHEMICAL CO., INC.
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LOS ANGELES

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the field and drop wires that require trimming on the back of the "Record." These sub-standard conditions are then summarized and referred to either plant or engineering for corrective action.

The duplicate copy of the "Record" is used by the contractor as a basis for billing and is filed in his office.

The author (left) and C & U plant superintendent, C. S. Ingraham, examining stumps killed by chemical.

The contractor's bill is checked against the original copy of the "Record" after inspection has been completed to insure accuracy of billing for work actually completed, inspected and verified.

The original copies of the "Record," together with the duplicate copies of the contractors bill, are filed in individual binders for each exchange. These binders are used as a guide in making surveys to evaluate results.

A cumulative summary of costs and mileage is kept up to date for each exchange. This summary indicates the progress of the program and also gives us a continuing comparison between estimated and actual costs and mileage.

Now, that the Brush Control Program is approved and in operation, its ultimate success depends, to a great extent, on carrying it through to its final objectives. Anything less than this would be reflected in decreased savings or possibly a loss of all or part of the monies invested in the program.

We have not meant to imply, nor do we contend, that our brush control program is infallible. We have made mistakes, learned some lessons, and are still suffering some "growing pains."

We do believe, however, that the basic principles of our program can be used as a pattern to help other Independent companies develop a program that will be tailored to their needs.

The prime purpose and justification of our existence is to furnish good tele-

MIDWEC BUILDING-OUT CAPACITOR STUB TYPE A

Designed exclusively for the telephone industry—
used and approved by leading telephone companies.

Potting Material—Filled Epoxy Resin
Cable Type—Standard Lead
Optional, Polyethylene
Cable Conductor—22 Gauge
Over-all Length Cable—12′ Standard or to Customer Specification
Tolerance—± 5% Standard, Other Tolerances Available on Request
All Capacitance Values Available to 4th Decimal, from .001 to .100
Building-out capacitor stubs should be ordered on Supplies Requisition as follows: "MIDWEC Stub, Building-Out Capacitor, ____pairs equipped, ____feet of cable, ____mf. capacitors, ____tolerance."

MIDWEC
OSHKOSH, NEB.

SALES OFFICE
601 So. Jason Street Denver 23, Colorado
Phone SH 4-0513—DDD 303

So Simple

It's a wonder nobody thought of it sooner

This is Shure-Set,® the tool that makes permanent attachments to concrete or building block with less than ten taps of a hammer. And it's about as easy to use as the hammer. Special steel fasteners are inserted at one end, your hammer strikes the other. And that's all, the fastening is made. (No powder charges are necessary.)

There's no drilling or plugging to do. And none of the problems associated with masonry nails. Shure-Set's anvil, an easy target to hit, concentrates the force of your hammer blow and applies it directly to the head of the fastener inside Shure-Set's precision bore. That way the hammer never skews off and the fastener never wavers. (Your fingers are well protected, too.)

And the austempered steel fasteners (nail-like drive pins and threaded studs) can't bend or break or fly around the room; they have the ideal metallurgical characteristics for efficiently penetrating hard construction materials.

Shure-Set will pay for itself by saving time. Probably on the very first job. It also saves a lot of (put your own price on it) perspiration. It's made by Ramset Fastening System. Write for more information, or call your local Ramset dealer. He's listed under "Tools" in The Yellow Pages.

Ramset® Fastening System

WINCHESTER-WESTERN DIVISION **Olin** 297-D Winchester Ave., New Haven 4, Conn.

TAKE A BIG STEP TOWARD SAFETY WITH DUO-SAFETY LADDERS

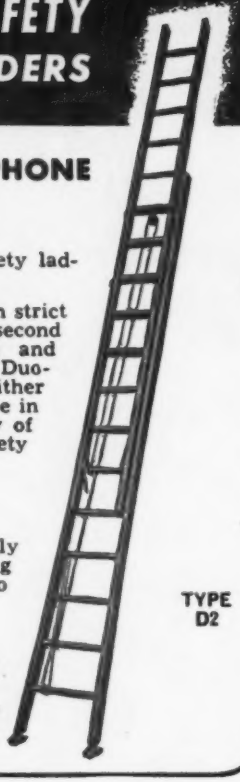
... CUSTOM DESIGNED FOR TELEPHONE MAINTENANCE WORK!

Here's one fine example of the many Duo-Safety ladders ideal for telephone maintenance work.

Type D — a truly great extension ladder built in strict accordance with safety regulations. Rungs are second growth hickory, reinforced with steel rods and equipped with special automatic locks and Duo-Safety's famous Safety Shoes. Made with either straight or parallel side rails, Type D is available in one, two or three sections — in a large variety of sizes. Write for free catalog on all Duo-Safety ladders.

IMMEDIATE DELIVERIES!

Duo-Safety ladders will be shipped immediately upon receipt of order! A planned stock-piling program assures really fast action — there's no delay the Duo-Safety way!

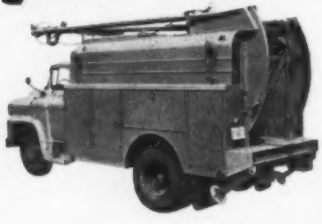


TYPE D2

For Information, Contact Your Supply House, or

DUO-SAFETY LADDER CORP.
809 Ninth Street • Oshkosh, Wisconsin

Koenig ALL-STEEL UTILITY BODIES



LINE-CONSTRUCTION BODY

. . . available in 9' to 14'6" lengths with mechanical or hydraulic winch and derrick, or any other special or custom equipment desired. Compartments can be arranged to your specifications.

SERVICE BODIES

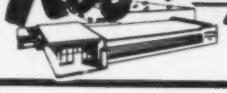
. . . for ½-, ¾-, and 1-ton chassis. Electrically welded into one unit with six waterproof compartments, recessed paddle handles keyed alike and fender skirt protected with die-formed rolled edges. Built for safe, dependable service . . . will outlast several chassis.

SIDE BOXES

For all pick-up trucks, including the new compacts. Watertight compartments . . . double panel doors . . . recessed paddle handles with cylinder locks keyed alike. Eleven types, seven lengths available.

YOU CAN BE SURE OF QUALITY MATERIALS AND WORKMANSHIP WHEN YOU SPECIFY KOENIG PRODUCTS
Write for literature and specific information today.

Koenig IRON WORKS, Inc.



P. O. BOX 7726
DEPT. V
HOUSTON 7, TEXAS

phone service at a reasonable cost. We of the Chenango & Unadilla Telephone Corp. are convinced that Chemical Brush Control is an important tool in helping us achieve this objective.

SALES TIPS

Continued from page 42

handy telephones to call for help if they need it.

Second main lines. Most of us think of additional lines only in relation to teenagers. They are an excellent market for auxiliary line service, but we mustn't overlook the convenience an additional line can mean for adults.

Perhaps Dad is active in civic affairs, or maybe Mom keeps the family telephone warm with her church and club activities.

In either case, the other members of the family don't get many opportunities to use the line. And, incoming calls don't stand much of a chance either.

In many cases, there a mother-in-law, an aunt, or a grandparent who has to vie for the use of the telephone.

All these folks are potential additional line customers. Make a mental survey right now of the families you know. How many of their lines always seem busy?

Find out the reason why, and if one person is dominating the telephone, suggest an additional line.

Remember, additional private lines in residences are available at low rates.

Statistics. By the time you're 70 years old, you'll have eaten about 16,650 meals and slept 200,000 hours.

And, if you're like most folks, you'll have spent 8,760 hours on the telephone. That's a full year of talking. Quote these figures to folks and ask them if they still think they don't need a private line.

Bedroom telephones. We have a tremendous market to sell. There are millions of bedrooms. An extension in a bedroom provides privacy, gives a sense of security, saves steps, is there for business calls at night.

What they say. Here are a few of the sales words and ideas used to sell color extensions:

- "Pattern your telephone service to fit your pattern of living."
- "Have handy telephones in color at your fingertips."
- "A cherry red telephone is a vivid touch of luxury in your living room—at a budget low price."
- "Every person in your family has his own personal color telephone need."
- "You can serve them all for pennies a day."
- "Dad needs a telephone in his workshop or by his favorite chair."
- "Mom can always use a telephone

FOR:

HAULING

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ON ROAD

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ALL WEATHER

SERVICE,

GET A

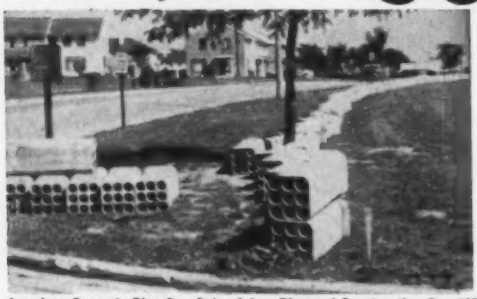
'Jeep' FLEET!

If there's a job to be done, there's a 'Jeep' vehicle to do it. A tremendous array of 'Jeep' approved special equipment handles thousands of specialized jobs. Traditional 'Jeep' ruggedness keeps 'Jeep' vehicles on the job years longer in any kind of weather, in any kind of "going" ☐ A 'Jeep' fleet is a sound business investment. Initial cost is low. Maintenance costs are low. And resale value is amazingly high. In fact, a two year old 'Jeep' Universal sells for up to 90% of original list price ☐ Find out about the 'Jeep' vehicles that are specifically designed to meet your needs. Write to R. J. Kreusser, Fleet Sales Manager, Willys Motors, Inc., Toledo 1, Ohio.

'JEEP' FLEETS—FROM THE WORLD'S LARGEST LINE OF 4-WHEEL DRIVE VEHICLES

Willys Motors, Inc., Toledo 1, Ohio. One of the growing Kaiser Industries.

CONDEX* MULTIPLE CONCRETE CONDUIT



Special fittings—miters—short lengths—expanded web sections available, also adapters to claytile, transite and fiber duct.

9 DUCT FORMATION ON JOB SITE

American Concrete Pipe Co., Sub. of Am. Pipe and Construction Co., 2025 S. Seventh St., Phoenix, Ariz. Tel: AL 2-7566
American Pipe and Construction Co., 4635 Firestone Blvd., Southgate, Calif. Tel: LOrain 4-2511
American Pipe and Construction Co., 101 Alquire Rd., Hayward, Calif. Tel: JEfferson 7-2072
American Pipe and Construction Co., 810 N.E. Columbia Blvd., Portland, Ore. Tel: BUtler 5-2531
Concrete Conduit Corp., 130-01 Northern Blvd., Corona, N. Y. Tel: ILlinois 7-1515
Chicago Pre-Cast Products Corp., 29W629 North Aurora Rd., Naperville, Ill. Tel: EL 5-2700—2701
Denver Concrete Products Co., 5020 Marshall, Arvada, Colo. Tel: HA 2-4202
Eastern Pre-Cast Corporation, 675 Main St., Tullytown, Pa. Tel: Windsor 9-3750
Elmore Concrete Products Co., Division of North Star Concrete Co., Elmore, Minn. Tel: Elmore 52
J. E. Evans Concrete Products Inc., Cleveland, Ohio. Home Office: Indianapolis, Ind. Tel: WAlnut 5-5301
J. E. Evans Concrete Products Inc., Shelbyville, Ind. Tel: WAlnut 5-5301
Neff Concrete Products Co., 711 Section St., Danville, Ill. Tel: Hickory 6-1016
PRE-CON Limited, Orenda Rd., Brampton, Ontario, Canada. Tel: HUdson 1-3492 (Toronto)
Pre-Con of Quebec, Ltd., Montreal, Quebec, Canada. Home Office: Brampton, Ont. Tel: HUdson 1-3842 (Toronto)
T.E.L. Pre-Cast Products Corp., 1 Industrial Ave., Edgewater, Florida. Tel: GArden 8-8881
Utah Concrete Pipe Co., 379—17th St., Ogden, Utah. Tel: EXport 9-1171
For information regarding CONDEX* Multiple-Duct Concrete Conduit, call or write your local producer, or the parent company.

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GAGNE ENTERPRISES, INC.
29W 629 NORTH AURORA ROAD
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"Better Holes by Heck!" WITH THIS

.... Self-Powered HOLE DIGGER

• The low-cost, fast way to dig holes. Fits on any A-frame. No expensive installation. Digs holes up to 8 ft. deep and 20 in. in diameter. One man operates digger with all controls mounted on machine. Made in 9-hp. and 18-hp. models. Auger is cleaned by spinning. Electric starter available. Digs anchor holes with ease. Operator shielded from moving parts. Film of machine in operation available. Write for descriptive bulletin.

HECKENDORN MFG. Co.,
CEDAR POINT, KANSAS
Tel.: BRoadway 4-3745

in the laundry room, kitchen and bedroom."

● "Sis likes a gay color telephone in her own room for those special 'private' calls."

Make a suggestion. Each of 18 students at the College of William and Mary recently was given $25 to spend in Norfolk, Va. stores.

Their instructions were to purchase an item that cost considerably less than $25.

However, if the retail sales person suggested additional items to buy, students were to purchase all they could until the $25 was gone.

Needless to say, each student was eager to spend his entire $25.

The sad truth was reported later by the president of the Hampton Roads Sales Executives Club.

"Out of a possible $450, students spent only $122.54. Items specified by the students totaled $77.59. Sales persons suggested additional items totaling only $44.95. The students wound up *not* spending $327.46."

How many additional sales do *we* lose each day because *we* don't suggest bedroom and kitchen telephones in color?

POWER CONTACT HAZARD

Continued from page 26

power system should have been tested to make sure that they were operating properly before placing the system back in operation.

In Case No. 3, it is obvious from the study made that the deviation from the recommended practices on protection by the telephone company, together with the failure of the power system circuit breaker to operate properly, resulted in the damage outlined. Moreover, if the recommended practices had been followed in the design of the telephone plant, the damage and potential for injury would have been materially reduced even with the failure of the power system circuit breaker to operate properly.

We have attempted in this article to indicate the danger involved and the trouble which can be caused by power contacts. We do not claim to have all of the answers to this problem, but we have attempted to furnish available information on action that may be taken to reduce this type of trouble to a minimum. One simple and basic rule which must always be observed is to provide the correct type of protection on all exposed telephone plant and make certain that it is connected to a low resistance ground. If a multigrounded power neutral or a water pipe system is not available, it might be well to

consider the use of deep grounding by driving sectional ground rods that are now available for this purpose. In any event, every effort should be made to provide a low resistance ground on all protectors.

TEXAS CONVENTION

Concluded from page 50

it," Louis E. Throgmorton, vice president of the Republic Life Insurance Co., Dallas, said in his speech, "Put Your Best Voice Forward."

Mr. Throgmorton stated that "Our business history has been that America has been able to produce it, absorb it and sell it."

He remarked: "It seems to me that the three "R's" are a part of the philosophy of the telephone system.

Nothing contributes more to understanding, than communication, Mr. Throgmorton commented. "The spoken word is the bond of our world society."

Directors of the Texas association are: W. S. Bain of San Antonio, Fabian Bearden of Baird, Morris S. Burton of Tyler, J. T. Chambers of Tenaha, Marion A. Clay of Lufkin,

Dee Cole of Greenville, E. H. Danner of San Angelo, C. R. Dowd of Hawkins, D. G. Gardner Jr. of Nocona, Claud H. Gilmer of Rocksprings,

R. A. Goodson of Dallas, P. D. Grinstead of Kerrville, C. A. Hendrix of Brazoria, J. B. McDuff of Crockett, Corwin Mendenhall of Anahuac,

H. Y. Price Jr. of San Marcos, J. T. Ricketts of Vega, D. M. Robb of Electra, Guy Smelser of Bogata, D. T. Strickland of Brownwood, W. G. Winters of Houston and Oscar Burton of Tyler, ex officio director.

Officers for 1961-62 are: President, Mr. Clay; first vice president, Mr. Bain; second vice president, Mr. Price; treasurer, Mr. Grinstead and executive secretary, J. B. Haley, of Austin.

C & S Products Appoints SW, N. Y. Representatives

C & S Products Co., Windsor Locks, Conn., has announced appointments of the following representatives for Semper-Seal, its epoxy-type cable splice and blocking compound:

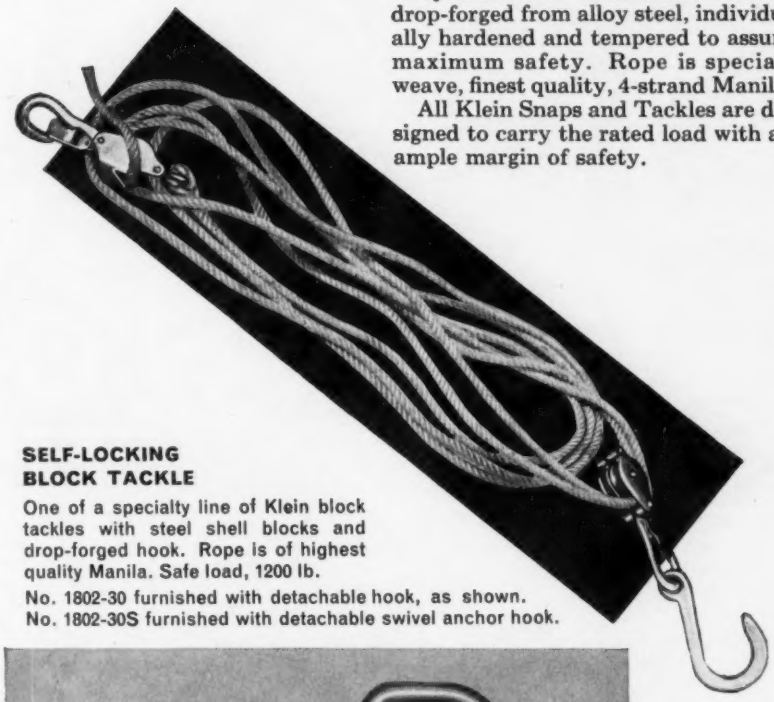
John T. Hill and William M. Rambo, serving southern California (south of Monterey, Kings, Tulare and Inyo counties) and Arizona. Office: 420 S. Pine St., San Gabriel, Cal.

Arthur F. Schultz, covering New York from Albany west. Office: 96 Oxford Rd., New Hartford, N. Y.

MAXIMUM SAFETY in tackles and snaps

Whether it is a block tackle or a hand line, you're assured of maximum safety when the tackles and snaps carry the Klein trade-mark. All are drop-forged from alloy steel, individually hardened and tempered to assure maximum safety. Rope is special-weave, finest quality, 4-strand Manila.

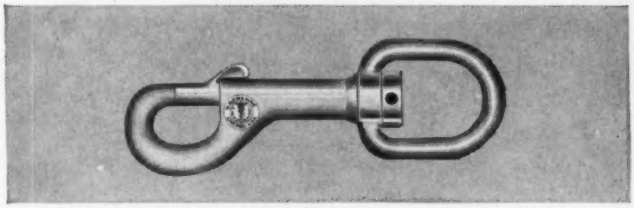
All Klein Snaps and Tackles are designed to carry the rated load with an ample margin of safety.



SELF-LOCKING BLOCK TACKLE

One of a specialty line of Klein block tackles with steel shell blocks and drop-forged hook. Rope is of highest quality Manila. Safe load, 1200 lb.

No. 1802-30 furnished with detachable hook, as shown.
No. 1802-30S furnished with detachable swivel anchor hook.



SWIVEL HAND LINE SNAP

The only drop-forged snap of this type on the market. Has swivel clevis and quick-acting plunger latch. Will take ½-inch or lighter hand lines. Safe load, 750 lb.

No. 470

FREE TOOL GUIDE

Write for 103TG Tool Guide covering the complete Klein line.

ASK YOUR SUPPLIER

Foreign Distributor: International Standard Electric Corp., New York

Mathias KLEIN & Sons
Established 1857
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WHAT'S NEW AT

SUTTLE

NEW PUSHBUTTON SERIES

for extra subscriber sales!

SE554	SE559	SE561	SE565
1 - 19	1 - 9	1 - 9	1 - 9
.65 ea.	1.60 ea.	3.50 ea.	5.60 ea.

For use in any audible signalling system, intercom use, or other office and shop subscriber use, SUTTLE pushbuttons answer all requirements. Lower in price than any others available, the housings are solid, executive type, blue-beige plastic. Cork base pads to prevent scratching are included with the SE559, SE561, and SE565. Used with the new SUTTLE Se-7 buzzer series or others. Write for full detail and prices.

SE559W	SE561W	SE565W
1 - 9	1 - 9	1 - 9
2.40 ea.	4.40 ea.	6.80 ea.

The SE559, 2-button, SE561, 4-button, and SE565, 8-button, are available with a 6' 22 gauge flexible cord, pre-wired. Screw terminals with screws are provided with each unit and cord tips are included. Designed for use at normal telephone, house or office voltages.

Write for full literature and prices.

SUTTLE EQUIPMENT CORP.

401 North 15th St., Lawrenceville, Ill.
Lawrenceville 782

135 S. LaSalle St., Chicago 3, Illinois
DEarborn 2-3108

IN THE NATION'S CAPITAL

Continued from page 20

pellate courts if he wanted a further review.

Without spelling out whether he had in mind two or three panels, President Kennedy pointed to the difference between the commission's gas jurisdiction and electric jurisdiction, respectively. With a two-panel division, the FPC could also be evenly bisected. One panel of three members could take care of the gas cases, another panel of three members could take care of the electric cases, and that would leave the chairman free to take care of the administrative and other details of the commission's operations.

Another proposal by the President would be to step up the authority of the commission chairmen—all of them. The President thinks they should have the responsibility of running the commissions from the standpoint of organization and administration and that they should hold office at the pleasure of the President. He may get some argument on this from Congress. In any event, few will disagree with his observation that the role of commission chairman should be "more clearly defined and his responsibility fixed in each agency," with a centralization of responsibility for management and function of the agency placed in its chairman.

This observer was puzzled a little bit by the President's reference to the fact that the electric jurisdiction of the FPC might greatly expand in future years. As the commission is mainly concerned with hydro licensing and inasmuch as most of the available sites have already been licensed, one would think that this would be an area of contracting jurisdiction. But the President said on this: "The chaos and delay now characterizing the gas regulation field may soon increase in the electric power area, where in the coming years the problems surrounding the future of hydroelectric generation will call for reappraisal and hence for added attention."

The President also recommended two other possible cures for the FPC case log-jam: (1) Authorize the commission to exempt from rate regulation some 3,000 small independent producers of natural gas, thus freeing the commission for "vigorous handling" of 270 cases of big producers, who account for 90 per cent of production and heavily influence prices. Some 4,000 rate increase cases are pending before the FPC. (2) Exempt gas pipeline construction cases of companies seeking permission to merely enlarge, extend,

How to CONTROL and ALARM the TOWER LIGHTS of UNATTENDED Microwave and Communication Stations

PHOTO ELECTRIC PANEL
Automatically turns Tower Lights ON and OFF in accordance with FCC regulations
FLASHER PANEL - Automatically Flashes Beacon Lamps — with balanced load provisions.
ALARM PANEL - Automatically provides signals indicating failure of any lamp, power or control.

Model LC 201
TOWER LIGHTING CONTROL UNIT
(for Two Light Levels)
Model LC 101 (for Single Light Level)
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Models also available with separate Alarm Signal for each Beacon Lamp.

Write for descriptive Bulletins

HUGHEY & PHILLIPS, INC.
Manufacturers of
300 MM Beacons, Obstruction Lights, Photo-Electric Controls, Beacon Flashers, Special Junction Boxes, Microwave Tower Light Control & Alarm Systems, Tower Isolation Transformers, and Complete Kits for: Tower Lighting, Sleet-melter Power & Control.
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DESICCANT
FOR DRYING CABLE SPLICES and Electronic Enclosures

DRIERITE dries the Cable Splice by positive absorption of all moisture from wires, insulation, bandage and surfaces inside the sleeve. Application is easy and rapid.

STANDARD PACKAGES
⅛ Pint Can (50 Grams), 48 per Carton.
½ Pint Can (200 Grams), 12 per Carton.
1 Quart Can (800 Grams), 12 per Carton.

orders filled same day

W. A. HAMMOND DRIERITE CO.
Xenia, Ohio

or replace existing facilities of existing customers.

In this regard, the President warned Congress that "the formulation of these standards will require creative imagination; but the alternative is to defend bureaucracy for bureaucracy's sake."

Federal Backing for U. S. Investors Abroad Urged

Harold S. Geneen, president of the International Telephone & Telegraph Corp., thinks that the United States government ought to guarantee private investments in South America against losses resulting from political actions. Speaking at a press conference in New York City on Apr. 7, he said that he was talking about guaranties that went beyond those of "the Inter-American Development Bank, the Export-Import Bank, the International Cooperation Administration" and other existing support.

Geneen stated that "if such guaranties are made available—and only government can do this—ITT would invest one quarter of a billion dollars in South America during the next five years." He explained that such a sum would amount to "roughly half the replacement value of our present investment," and would thus represent a 50 per cent expansion on top of our already extensive investment. Geneen commented that he had asked to see Senator Smathers (D., Fla.) to explain ITT's views.

The ITT president recently returned from a tour of the company's properties in South America, with particular attention paid to operations in Chile, Argentina, and Peru. He said that he had come away with the definite impression that "no responsible political leader in Latin America wants to put his country on a United States dole, however generous." He also indicated that the proposed 500-million-dollar administration program for this area "would not care for the full needs of even one major Latin American city for very long." Geneen stated: "What Latin America needs and wants is an economic partnership, not charity."

One high South American government official told Geneen that "we welcome business investment and experienced business initiative because what we need is industry to provide steady work, to create middle classes with ownership, and to accelerate the widening pattern of industrial growth and consequent national wealth."

Opportunity Doesn't Knock

"A wise man will make more opportunities than he finds."—BACON.

with a *Truco* 8000 lb. Center Mount Derrick

Never underestimate the power of a Truco turret derrick — especially the new compact Universal Center Mount Derrick. Here is a ruggedly built, all around utility tool that lifts, digs, puts a man in the air, sets a pole and installs the hardware. You mount it behind the cab of any standard line body in only 16" of space*. You get 360° rotation of the box-type steel telescoping booms from dual unitized controls. You lift up to 8000 pounds of payload with smooth hydraulic operation while twin hydraulic outriggers keep your vehicle Gibraltar steady.

You'll be able to dig those holes that just couldn't be dug before, too. Truco's new 4-speed hydraulic digger has three conventional speeds plus a brand new super low speed for biting through shale, caliche and hardpan — even anchor holes are possible with ease at *any* angle, in *any* direction. For aerial lift use, add a fiberglass safety basket with airplane-type single stick control.

Before you buy, insist on seeing this multi purpose utility tool in action. Investigate the savings *you* can make on *your* utility jobs — in dollars, manpower and time. See your Truco dealer or write for details.

**Also available for corner mount installations.*

TRUCK EQUIPMENT COMPANY

"The COMPLETE Line of Utility Equipment"

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Enrollment Still Open for USITA Management Program

The United States Independent Telephone Association's Personnel Committee on Apr. 14 stated that opportunities for enrollment in the USITA Management Development Program still exist for those managements which will act very promptly.

The management course is scheduled for the four-week period July 16 to Aug. 11, 1961, at the University of Kansas, School of Business, Lawrence, Kan. (TELEPHONY, Feb. 18, p. 33).

USITA's Personnel Committee points out "Management people with good prospects for the future—and of the type who have been enrolling for this program—are always extremely busy people who find it very difficult to be away from their respective businesses long enough to participate in this four-week program. However, they also recognize that it is extremely important to take time to qualify themselves for the increasingly difficult problems we all will be facing in the future."

The committee also observed that it is easy to postpone training of this kind, with hopes that it will be easier to send participants next year or the year after that, even though a review of years past will show that one's situation does not improve unless one takes steps particularly designed to improve it.

The committee advanced another insight: "Managements which are better preparing their personnel for the future through sending them to development programs, such as the USITA's at the U. of Kansas, are really making an investment for the future rather than a sacrifice."

Applications for enrollment should be mailed to:

Dr. James R. Surface, Director
USITA Management Development Program
c/o The University of Kansas
School of Business
Lawrence, Kan.

Companies not having an application form are requested to telephone or wire Dr. Surface at the above address, indicating also that regular form application and enrollment fee will be submitted promptly upon receipt of the application form.

Lucier, Schomaker Form Financing Company

Formation of Telephone Communications Corp., to render financial assistance to Independent telephone companies, has been announced by Phillip J. Lucier, president.

P. J. LUCIER

Other officers are G. Warren Schomaker, vice president, and Morris Kugler of Okawville, Ill., general manager.

Mr. Lucier said it is the purpose of Telephone Communications to help Independent companies and operating groups which have problems of obtaining sufficient equity to meet their growth potentials.

"With the problem of debt financing now largely resolved through public and private lending agencies," stated Mr. Lucier, "the majority of Independents face a new problem: how to raise equity capital that will support a continuing program of expansion.

"It should be possible for a well-managed operating company to obtain financial assistance in broadening the scope and quality of its service without surrendering its autonomy as the price of progress," continued Mr. Lucier.

G. W. SCHOMAKER

"Telephone Communications Corp. is primarily an organization specializing in the field of financing, both equity and debt. Telephone company management, freed of this responsibility, can concentrate in its own area of specialization—the operating function."

Mr. Schomaker further explained the purpose of the new holding company as furnishing a source from which an operating company obtains not only the necessary equity to improve its financial position, but also other specialized services, such as rate and commission work, toll separation studies, and engineering assistance in the new techniques now available to the industry.

Original investors in Telephone Communications Corp., according to Mr. Lucier, include a number of large investment houses and stock specialists. As an initial investment, the holding

No. 700 (Princess style) $1.75

PERFECT GIFT AND AWARD ITEMS

In The Telephone Motif

Perfect miniatures, beautifully molded in colors and materials to match today's telephones. Finest quality ball point pens and holders to match. Swivel allows pen to rest at any angle. Individually boxed. Sets double in service as paper weights. Truly handsome and practical accessories. Special discounts to telephone company employees. Give company affiliation when ordering. Write for more details.

MASTERCRAFT PEN CO.

883 Abrego, Monterey, California

No. 500 (Swivel Pen) $1.75

company has purchased the Millstadt (Ill.) Telephone Co. and has undertaken an expansion program of its three dial exchanges. Contracts to acquire the common stock of Tuftonboro Telephone Co., Inc. of Melvin Village, N. H., and the Treasure State Telephone Co. of Absarokee, Mont., are also underway.

Both Mr. Lucier and Mr. Schomaker were "born" in the telephone industry, and each has a background that includes sales, as well as financing. Mr. Lucier participated in establishing the first nationwide program of debt financing for smaller telephone companies — Stromberg-Carlson Credit Corp.—and has managed that operation for the past 10 years. Mr. Schomaker, before joining Mr. Lucier in the credit corporation, was manager of apparatus engineering, and later a sales representative with Stromberg-Carlson.

MORRIS KUGLER

Telephone Communications Corp. will make its headquarters at 525 Siteman Bldg., 111 S. Bemiston St., Clayton 5, Mo. Clayton is a suburb of St. Louis, central to the new company's operation that will be nationwide in scope, according to Mr. Lucier.

Platteville Company Is 1st Wis. Independent With DDD

On Mar. 19, the Platteville (Wis.) Telephone Co. joined the nationwide DDD (Direct Distance Dialing) network, to score a first among Independents in Wisconsin.

Subscribers of the Platteville company and two of its tributaries, Belmont and Dickeyville, can now enjoy the convenience of dialing their long distance calls directly to other parts of Wisconsin and 40 other states across the country.

Automatic Electric Co.'s SATT

We Welcome your Comparison of the

DAVIS T-66

against all comers!

AS A TRENCHER...AS A BACKFILLER

Find out why owners from coast to coast, border to border and in many foreign countries, call it their "Best Money-Maker"!

The T-66 makes its owners more money because it does the complete job from initial cut to backfilling with greater efficiency than any two machines. A competitive demonstration will prove it. Extra-heavy, 1400-lb. weight, large track shoes, and a unique hydraulic drive combine for ground-gripping traction that gives accurate ditching control and backfilling power. No rubber-tire bounce! Hydraulic boom control makes you the "boss" of the digging depth and backfill blade. Agile backfilling maneuverability is attained by Instant Forward/Reverse. No trencher touches it in the range between **12" wide,** 30" deep and 4" wide, **66" deep.** It can also be equipped to dig **16" wide,** 24" deep — or **flush** alongside walls and fences. Built to handle toughest assignments. Produced by men who are leaders in the design of digging equipment.

the DAVIS HUSTLER UTILITY TRAILER

This 2000-lb. capacity, tilt-bed trailer for the T-66 and other loads has low center-of-gravity stability and load equalization suspension system. Sides optional.

the DAVIS PUP TRENCHER *Self-Propelled*

Digs by itself. This self-propelled trencher is driven by a six-speed winch mechanism. A productive tool for trenches 2"-3" wide to 36" deep, or 4" wide, 18" deep.

We Welcome Competitive Demonstrations!

See for yourself why the T-66 is the standard bearer of trencher value. Ask about its 90-day unconditional guarantee!

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Please send me descriptive T-66 literature and the name of my DAVIS dealer____. I am also interested in the Davis Pup___ Davis Hustler___.

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D3-261

INDIANA
TERMINAL HOUSINGS
For Buried Wire & Cable

ENGINEERED
TO SAVE YOU
TIME AND LABOR

ONE screw like this is all that's required to complete the assembly of INDIANA Pedestal-Type Terminal Housings. This is typical of the time and labor-saving features to be found in these carefully engineered housings for buried wire and cable.

Made of heavy gauge steel and galvanized AFTER forming, INDIANA Terminal Housings provide long-lasting protection to terminal blocks, loading coils and/or splicer. Both pedestal and pole-mounted types, designed to accommodate from one to 400 pairs, are available.

Ask your distributor about these dependable, economical housings, or write for Bulletin No. TH-101R.

INDIANA
Steel & Wire Company, Inc.
Muncie, Indiana

(Strowger Automatic Toll Ticketing) equipment gives access to the DDD network through trunks to Madison, Wis. and Dubuque, Ia.

The first call after cut-over was made by Platteville's Mayor Henry Hanson to Herbert F. Lello, president of Automatic Electric at Northlake, Ill.

Mr. Lello's words of congratulations were heard over a Speakerphone by 65 Wisconsin telephone officials and Platteville residents assembled in the student union of Wisconsin State College.

The three exchanges in southwestern Wisconsin provide DDD service to 1,300 subscribers with one- and two-party lines on an automatic number identification basis. In addition, 1,700 multi-party subscribers receive DDD service via a checking operator.

ITT Will Invest in S. Amer. If Given Protection

Harold S. Geneen, president of International Telephone & Telegraph Corp. said on Apr. 7 that his corporation is prepared to invest a quarter of a billion dollars in South America, if the United States government established guarantees against losses resulting from political action.

He declared that if such guarantees of private capital were made, ITT would invest this huge amount "during the next five years. This is an amount roughly equal to half the replacement value of our present investment. This is therefore, a 50 per cent expansion on top of our already extensive investment."

ITT has broad interests in South America, operating national and international communications, and producing communications equipment and consumer products for many markets.

Mr. Geneen revealed his proposal in a press conference, in which he reported on an extensive visit to South America where he discussed economic and political problems with the presidents of Argentina, Peru, and Chile.

He contended the cost of making good on the "few investments that might be lost" under such a program "is insignificant, compared with the cost of outright foreign aid." He insisted a political guarantee would create "a climate for investment" and would "not involve any major government outlays."

Discussing the economic approach, Mr. Geneen said:

"No responsible political leader in Latin America wants to put his country on a U. S. dole, no matter how generous. As a matter of fact, the 500-million-dollar program recommended by

REPAIR AND COLOR

BRIGHT NEW COLORS BUILD NEW BUSINESS

DIALS—repaired or modernized fast with satisfaction guaranteed by exclusive, Hallamore designed electronic test apparatus.

TELEPHONE INSTRUMENTS AND PAY STATIONS—given the new look (changed from black or faded color to your choice of user-attracting shades by the magic of tough, durable Hallaplast) while they are brought to peak efficiency.

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EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

the administration—helpful as it may be—by itself would not care for the full needs of even one major Latin-American city for very long. But that is not the point. What Latin America needs and wants is an economic partnership, not charity. It is important that we fully realize the significance of this, and consider U. S. policy and action accordingly.

". . . at no time have the tides of international anti-democratic political and social pressures, political techniques and committed resources been as high, and as dangerous, in the western hemisphere as now.

". . . we have a fortunate phenomenon in South America; at a time of greatest dangers, we find the most courageous leadership."

Mr. Geneen warned that the time to "support this leadership is short. The terms of office of these men will be expiring within the next few years. Unless we help them effectively to progress toward their goals, their opportunity will be lost. . . . We, as well as they, have much at stake."

South American governments, he said, "have a genuine sense of responsibility and will honor obligations freely undertaken. This sense of responsibility is inherent in the people themselves. For example, in the Argentine, less than one-half of one per cent of consumer credit extended for the purchase of television sets had to be written off."

Against this, he maintained:

". . . still stands the record of Cuba. At the moment, it represents a great deterrent to the free generation of the necessary private funds to aid in the establishment and continuance of stable economies.

"We cannot expect the investment to be as rapid and as extensive as needed in the face of what has happened in Cuba. I propose, therefore, that the United States guarantee private investment against losses resulting from political action."

Mr. Geneen said his suggestions for Latin America were not based on "idle theory." He pointed to Puerto Rico as an example of what could be achieved by encouragement of private investment by government. He pointed to the development in Puerto Rico of 700 factories producing 450 products as a "modern example of the economic miracles that can still be wrought by private enterprise."

The ITT president also noted, "if we expect to sell to Latin America, we must buy from Latin America. This is a simple rule of commerce that is often forgotten in our new-found concern over gold outflow."

Apropos of world competition, he said, "often the only way a U. S. company can possibly compete in the world export market—of which Latin Amer-

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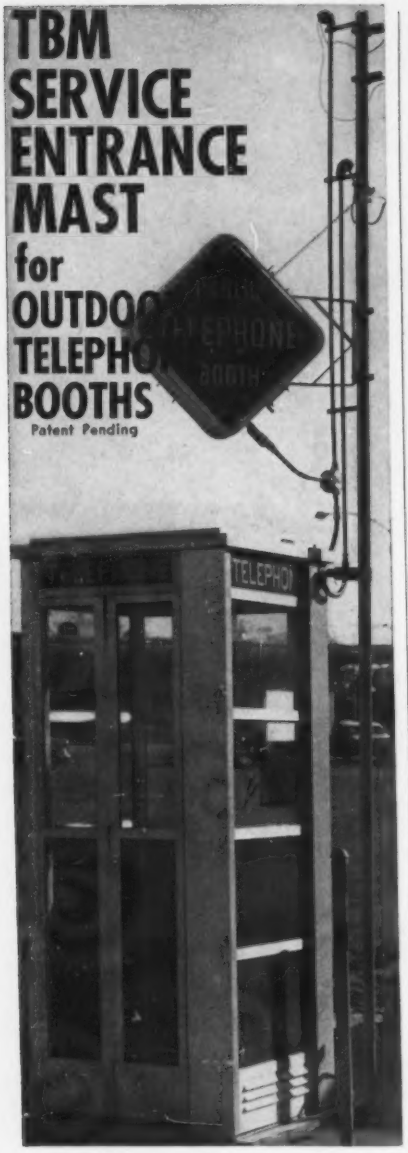

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ica is only a part—is to offer goods it manufactures in Europe . . . if U. S. firms are to be handcuffed, in the face of two-fisted competition, because of unrealistic tax laws, trade with these growth countries will be lost to competitors from Western Europe, Japan, Canada and, in time, to Iron Curtain countries."

He termed as "unrealistic" recent proposals in Washington, which he said would force U. S. companies abroad to "pay taxes both in the host country, and in the United States without any offset."

In conclusion, Mr. Geneen said that this would amount to "three complete compound taxes before the net return to individual shareholders, and if such proposals became law, ultimately U. S. companies abroad would be compelled to close down or sell out; and individual investors would gravitate to foreign countries. The U. S. flag would be lowered in the markets of Latin America and the world."

Hollingsworth Heads Hubbard Sales; Relocate Office

Thomas Hollingsworth has been elected vice president in charge of sales of Hubbard & Co., pole line hardware and electrical apparatus manufacturer. Mr. Hollingsworth was formerly general sales manager.

THOMAS HOLLINGSWORTH

Before joining Hubbard, Mr. Hollingsworth was manager of product planning for Westinghouse Electric Corp. Earlier in his Westinghouse history, he served in various sales management capacities in that corporation's apparatus division.

Mr. Hollingsworth is a graduate of the University of Texas, where he received his bachelor degree in electrical engineering.

He will operate out of the company's

●Here's the reel jack that is strong and stable without hard-to-handle extra weight. An aluminum alloy housing reduces overall weight by 21 pounds, yet maintains full 10-ton capacity. "T" shaped laminated oak base gives solid, safe foundation. Single acting mechanism provides easier operation. Handles reels to 84" dia.; weighs 83 lbs. Furnished with 5' lever bar.

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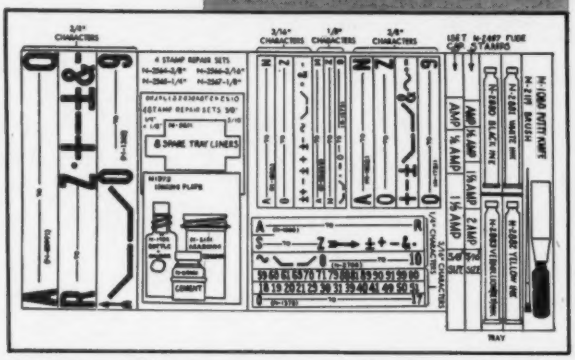

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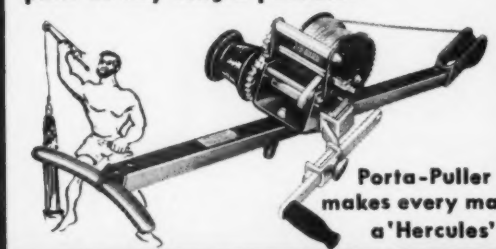

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new executive office at 5401 W. Roosevelt Road, Chicago. Hubbard & Co. is moving its executive offices from Michigan Avenue to the main factory location at the Roosevelt Road address in May of this year.

Included in the move will be management and sales offices and legal and accounting departments. Reasons for the change are to obtain a further improvement in customer service by means of a closer contact between executive, sales and production departments.

Gale Heads Communications Sales for Graybar

T. R. Gale has been appointed manager, utility communications sales of Graybar Electric Co., Inc., W. E. Henges, Graybar president recently announced. In this capacity, Mr. Gale will coordinate systems engineering and other requirements connected with the sale of complete microwave communications "packages" by Graybar.

The "package" concept of microwave sales is the result of recently-completed arrangements between Graybar and Lynch Communications Systems, Inc., whereby Graybar will supply the radio frequency equipment together with carrier multiplex terminals and repeaters. Similar agreements with other manufacturers add towers, antennas, power generating and tower lighting equipment as well as other related material and services to form the Graybar-supplied microwave system "packages."

Most recently, Mr. Gale has been assistant to Graybar's manager of government and communications sales at Washington, D. C. Prior to that he was manager, communications sales at the company's Dallas, Tex., district office from February, 1955, through August, 1959. He originally went to work for Graybar at Richmond, Va., where he was in telephone sales.

An electrical engineering graduate of Georgia Tech., Mr. Gale served as a signal officer in the Army during World War II, attaining the rank of major.

No Bottomless Bucket

"If management fails to apportion the benefits of greater productivity on a fair sharing basis among share owners, employes and customers; if labor takes all of the productivity increases in the form of higher wages; if government keeps increasing the tax load without making sure that it has first eliminated waste and extravagance of its present tax revenues, there won't be anything left for anybody. There isn't any bottomless bucket of gold in this economy or any other economy. . . ." —PRESIDENT DON G. MITCHELL *of General Telephone & Electronics Corp.*

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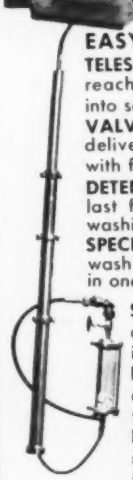

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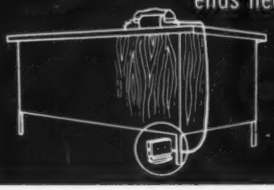

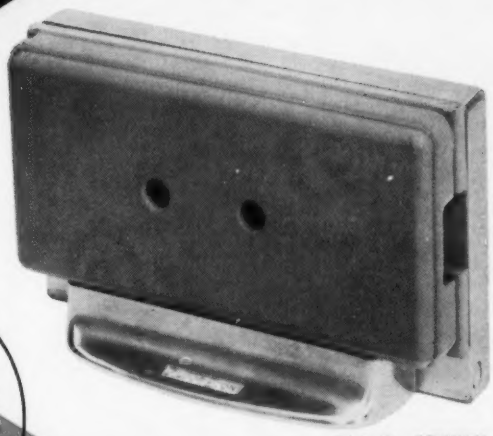

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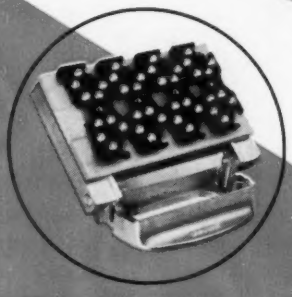

MODEL 104 shown with standard telephone equipment, accommodates up to 8 No. 44-A Connecting Terminals (4 on each side).

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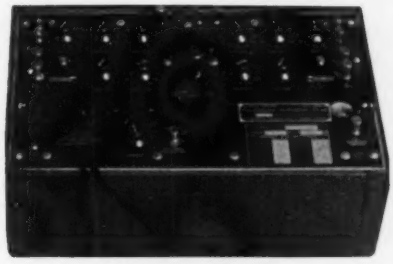

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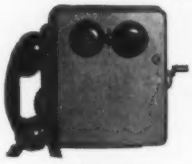

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Index to ADVERTISERS

	Page
AC Spark Plug Div. of General Motors	59
Ace Tree Service	—
Acme Electric Corporation	—
Acme Visible Records, Inc.	73
Airtronics International Corp.	—
Alphaduct Wire & Cable Co., The	75
Altec Lansing Corp.	—
Aluminum Company of America	—
Aluminum Ladder Co.	—
Amchem Products, Inc.	74
American Creosoting Corp.	—
American Electrical Heater Co.	—
American Steel & Wire Co.	—
American Telephone & Telegraph Co.	10-11
Anaconda Wire & Cable Co.	2-3
Anson Inc., Art	114
Ansonia Wire & Cable Co., The	—
Arps Corporation	98
Arrow Fastener Co., Inc.	115
Automatic Electric Sales Corp.	12-13, 66-67
Barber Advertising Specialists, Walt	—
Batlle & Co., Inc., Jos. A.	—
Bell Telephone Laboratories, Inc.	—
Benner-Nawman, Inc.	87
Berry & Co., L. M.	—
Bishop Manufacturing Corp.	63
Brady Co., W. H.	—
Brand, Wm.—Rex. Div.	45
Buckeye Telephone & Supply Co.	118
Budelman Electronics Corp.	—
Burgess-Manning Company	113
B. Y. Dial Service	119
C&D Batteries, Inc.	—
Cabaniss-Pogue Co.	116
Cable Construction Co.	116
Cable Spinning Equipment Co.	—
Calculagraph Company	—
Carter Directory Co., Inc.	—
Chance Co., A. B.	—
Chevrolet Div. of General Motors	—
Chicopee Mills Inc.	—
Cleveland Inst. of Electronics	—
Collins Radio Co.	77
Colorado Fuel & Iron Co., The	72
Commercial Cord Company, Inc.	82
Communication Equipment & Engineering Co.	83
Comptometer Corporation	—
Cook Electric Company	61
Copperweld Steel Co.	48-49
Crane, Inc., Carl C.	116
Davis Construction Co.	—
Davis Mfg. Co.	109
Dial Haven, Inc.	116
Diamond Expansion Bolt Co.	114
Dierks Forests, Inc.	116
Donnelley & Sons, R. R.	—
Duo-Safety Ladder Corp.	102
Dupont de Nemours & Co., Inc., E. I.	—
E. & C. Contracting Co.	116
Electronic Specialties Co.	—
Everstick Anchor Co.	110
Exide Industrial Div.	—
Fairfield Industries	113
Fitchburg Engineering Corporation	—
Floor-Con	115
Ford Motor Co., The	—
Gagne Enterprises, Inc.	104
General Cable Corporation	78-79
General Dynamics/Electronics	33-38
General Machine Products Co., Inc.	69
General Telephone Directory Co.	122
Gladwin Plastics, Inc.	—
Gould-National Batteries, Inc.	18
Graybar Electric Co.	70-71
Haley & Co., R. G.	—
Hallamore Electronics Co.	110
Hammond Drierite Co., W. A.	106
Harris-McBurney Company	—
Heckendorn Mfg. Co.	104
Henkels & McCoy	116
Highway Trailer Company	—
Hirsch Organization, Inc., Gustav	96
Hitachi, Ltd.	—
Holan Corp.	—
Hollandsworth, F. M.	116
Hughey & Phillips, Inc.	106
Indiana Steel & Wire Co.	110
International Teletronics, Inc.	47
Irwin-Auger Bit Co.	—
ITT-Kellogg	8-9
Jet Line Products, Inc.	—
Johns-Manville	—
Justrite Mfg. Co.	92
KaMo Tools Dept. of Kwix-Mix Co.	88
Kato Engineering Co.	—
Kearney Co., Jas. R.	—
Kemode Mfg. Co.	118
Kennecott Wire & Cable Div.	—
Keystone Steel & Wire Co.	81
Killoren Company	112
Klein & Son, Mathias	105
Koenig Iron Works, Inc.	102
Kohler Co.	90
Koiled Kords, Inc.	—
Koppers Co., Inc. Wood Preserving Div.	—
Kwal Paints, Inc.	86
Kwik-Mix Co.	88
Leich Sales Corporation	6-7, 14-15
Lenkurt Electric Co.	—
Lindsay Telephone Supply Co.	—
Lorain Products Corp., The	5
Lynch Communications Systems, Inc.	—
Magnolia Chemical Co., Inc.	100
Mast Directory Co., Leland	116
Mastercraft Pen Co.	108
McCabe-Powers Body Company	—
McGrath Engineering, Inc.	116
Midwec	100
Minnesota Mining & Mfg. Co.	—
Monsanto Chemical Co.	—
Morrison-Pelsue Co.	111
Natco Corporation	—
National Standard Co.	—
National Telephone Supply Co.	—
Neubauer Manufacturing Co.	96
Neuses, Inc., P. K.	113
Nippon Electric Co., Ltd.	93
Northeast Electronics Corp.	—
North Electric Company	17
Okonite Company, The	—
Olin Mathieson Chemical Co.	101
Onan Division, Studebaker-Packard Corp.	—
Orangeburg Mfg. Co.	—
Osborne Electronics Sales Corp.	—
Owens-Illinois	80
Panhandle Electric Sales, Inc.	—
Parsons Div. of Koehring Co.	84
Petersen Engineering Co., Inc.	—
Phelps Dodge Copper Products Corp.	39
Philco Corporation Gov. & Ind. Div.	—
Plastic Wire & Cable Corp.	—
Plastimayd Corporation	—
Pole Sprayers, Inc.	94
Porter, Inc., H. K.	—
Precision Multiple Controls	—
Preformed Line Products Co.	55-57
Puregas Equipment Corp.	76
Railway Communications, Inc.	—
Ramset Fastening System	—
Raytheon Company	—
Recordak Corp.	—
Reichhold Chemicals, Inc.	85
Reliable Electric Company	40-41
Rolatape, Inc.	—
S & G Manufacturing Co.	53
Sanders & Associates	89
Schauer Mfg. Co.	92
Seymour Smith & Son	—
Sherron Metallic Corp.	16
Sierra Electronics Corp.	43
Sloan, Cook & Lowe Co.	116
Southwire Co.	97
Stampings, Inc.	—
Stewart Brothers	—
Superior Cable Corporation	51
Suttle Equipment Corporation	106
Telectric Co.	117
T.E.I. Corp.	116
Telephone Repair & Supply Co.	119
Tele-Wire Supply Co., Inc.	119
Tele-Muff Co.	—
Teletype Corporation	95
Tel-Tronic's Instal. & Supply Co.	116
Templeton, Kenly & Co.	112
Terado Company	—
Texas Instruments Inc.	121
Thornhill Publishing Co.	—
Tower Construction Co.	94
Transandean Associates, Inc.	91
Truck Equipment Company	107
Tucker Mfg. Co.	114
Tudor & Yager, Inc.	116
Union Carbide Plastics Company	—
United Electric Controls Co.	—
U. S. Cable Constructors, Inc.	116
United States Independent Telephone Association	65
United States Instrument Corp.	87
United States Motors Corp.	99
United States Steel Corp. American Steel & Wire Co.	—
Universal Controls Corp.	—
Utilities Contracting Corp.	116
Utility Equipment Co.	—
Utility Service Co., Inc.	112
Utility Tool & Body Co.	—
Vermeer Manufacturing Co.	—
Warren Mfg. Co., The	—
Weikel Line Company	116
Western Electric Co.	—
Whitney-Blake Co.	—
Williams Inspection Co., Inc., A. W.	116
Willys Motors, Inc.	103
Wilson Rubber Co.	—
Winders & Geist, Inc.	—
Wiremold Co., The	98
Wyoming Valley Equipment Div.	—

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